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...The Pennsylvania State College...

ILLUSTRATION

AND

DESCRIPTION

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...HISTORICAL SKETCH...

THE Pennsylvania State College was chartered in 1855 as "The Farmer's High School of Pennsylvania." A donation of two hundred acres of land in Centre County from Gen. James Irvin, to which were added by purchase two hundred acres more, was used as the site of the School. For erecting and equipping buildings the State Agricultural Society gave $11,865, the Trustees raised $54,785 by subscription and the state, in 1857, appropriated $50,000. In 1861 the state voted $49,900 more for the completion of the main building, although the institution had opened its doors February 20th, 1859. In 1862 the well-known Land Grant Act, proposed by Senator Morrill, of Vermont, was passed by Congress. The important conditions imposed by the act were as follows:

(a) That each state accepting the grant should, within five years, "provide at least one College," where "the leading object should be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, * * * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

(b) That the work of instruction should be carried on "in such manner as the Legislature of the states may respectively prescribe."

(c) That the proceeds of the sale of lands should be invested by the State so as to produce a permanent revenue of not less than 5 per cent.

(d) "That no portion of said proceeds, nor the interest thereon, shall be applied, *directly or indirectly, under any pretense whatever, to the purchase, erection, preservation or repair of any building or buildings.*"

The next year the Legislature of Pennsylvania accepted this act "with all its provisions and conditions," and pledged "the faith of the state" to carry it into effect. The proceeds from the sale of these lands, 780,000 acres, amounted to $439,168.80. This was invested by the state and the income turned over to the College, thereby rendering it the medium and agent through which the state fulfilled its obligations to the general government.

In 1878 the state paid a mortgage of $80,000 on the College, incurred by a loan which was authorized by the Legislature, and in 1889 and 1890 accepted the conditions of two succeeding Acts of Congress, providing for the establishment of Agricultural Experiment Stations at the State Colleges and for a more complete endowment and support of the Colleges for the benefit of Agriculture and Mechanic Arts.

By these successive measures the Pennsylvania State College, though at first a School conducted by private individuals, became a state institution, under the full control of the state Legislature. Yet from the year 1878 to 1887 the College was almost entirely neglected by the state and was left to struggle on alone. Up to this time the Legislature had appropaiated in all only $182,900 for the support of the College, $177,900 of this being for the erection of the main building. In 1887, the state entered upon a new era in its dealings with the College. Leading men throughout the commonwealth felt that Pennsylvania had too long neglected its own interests as well as the obligations assumed towards the United States. After a careful inquiry $112,000. was appropriated towards putting the College on a better footing. The total amounts then and since appropriated are as follows:

Buildings	$430,506 73
Equipment	112,150 00
Repairs, Improvements, Insurance and Maintenance of Plant	136,710 00
Maintenance of Departments of Instruction	156,000 00
Total	$835,366 73
Average per year, total	$59,669 05
For Maintenance	11,143 00

This sum may appear large when standing alone, but it shrinks to insignificance when compared with the amounts appropriated by most of the other states to their State Colleges, or with the amounts actually needed for the maintenance of a technical institution of high grade

The Growth of the College.—The founding of State College was the outcome of a long cherished plan of the most thoughtful and influential men of the State, who were particularly solicitous that the agricultural supremacy of Pennsylvania should be maintained. It was called "The Farmer's High School," as there was thought to be at that time a considerable prejudice among farmers against the word College. The scheme of instruction, however, was put upon a collegiate basis from the beginning. Accordingly in 1862, three years after the College was opened, the name was changed to "The Agricultural College of Pennsylvania," and in 1874 to "The Pennsylvania State College."

The first President, Dr. Evan Pugh, took his seat during the second year of the College. He died in 1863, having served only three years. He was followed by Dr. W. H. Allen, who served till 1866. The other Presidents of the College were Gen. John Frazer (1867–68), Dr. T. H. Burrows (1869–71), Dr. James Calder (1871–80), Joseph Shortlidge (1880–81) and Dr. George W. Atherton (1882—), who is serving at the present time.

For many years after the founding of the College its history was one of struggle and of unappreciated, because unknown, work. During this period the work went on almost uninterruptedly, although under manifold disadvantages and difficulties which seriously crippled its usefulness and prevented the outside world from knowing that such an institution was in existence and open to the citizens of the State. Even with the change of title to that which it now bears, the general public was slow to understand or believe that here was an institution steadily building up about it the traditions and the atmosphere of a seat of learning which was destined to occupy a large space in public esteem and exert a wide influence for good upon the thought and activities of the State. Beginning with only one course, the Agricultural, the College has since broadened its curriculum by adding or sub-dividing different departments, as the growing requirements made it necessary, so that at the present time instruction is offered in the following complete courses: General Science, Classical, Latin Scientific, Philosophy, Agriculture, Chemistry, Biology, Mathematics, Physics, Civil Engineering, Electrical Engineering, Mechanical Engineering and Mining Engineering. In addition to these, there are several short courses, consisting mostly of practical work, designed especially for those who are not in a position to take a full college course. All of the courses named, with the exceptions noted, require four years for completion.

New buildings were erected from time to time to meet the demands of the College. They at present comprise the Main Building, Experiment Station, Farm Buildings and Barns, Botanical Laboratory and Conservatory, Chemical and Physical Building, Armory (which is also used as a gymnasium), Ladies' Cottage and the Engineering Building. To this list may now be added a noble Auditorium, the gift of Mr. Charles M. Schwab, and a fine Library Building, made possible through the generosity of Mr. Andrew Carnegie.

Until the year 1880 the institution made no substantial gain in public favor, as indicated by its register of students and its reports of work done. In the annual report of 1879–80, the total number matriculated since the foundation of the College is given as 1,472, of which number only 100 were graduated. The following tabulated statement, taken from the "Biennial Report on Higher Education in Pennsylvania" for 1900, will show clearly its progress from 1880 until the present time :

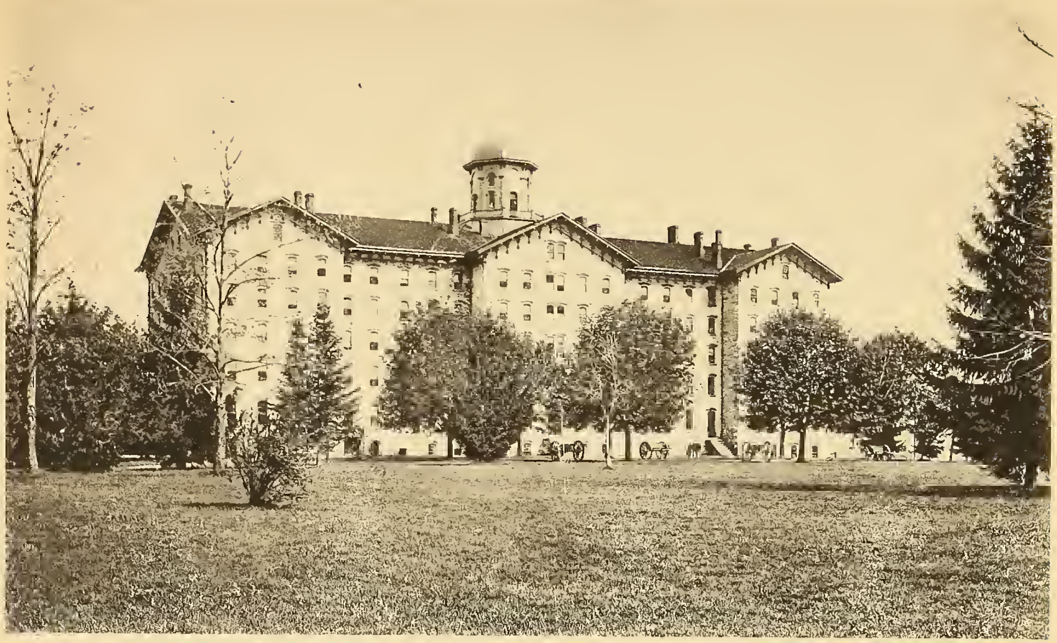
SUMMARY FOR THE YEARS 1880-1 TO 1901-2

As shown by Catalogues for those Years.

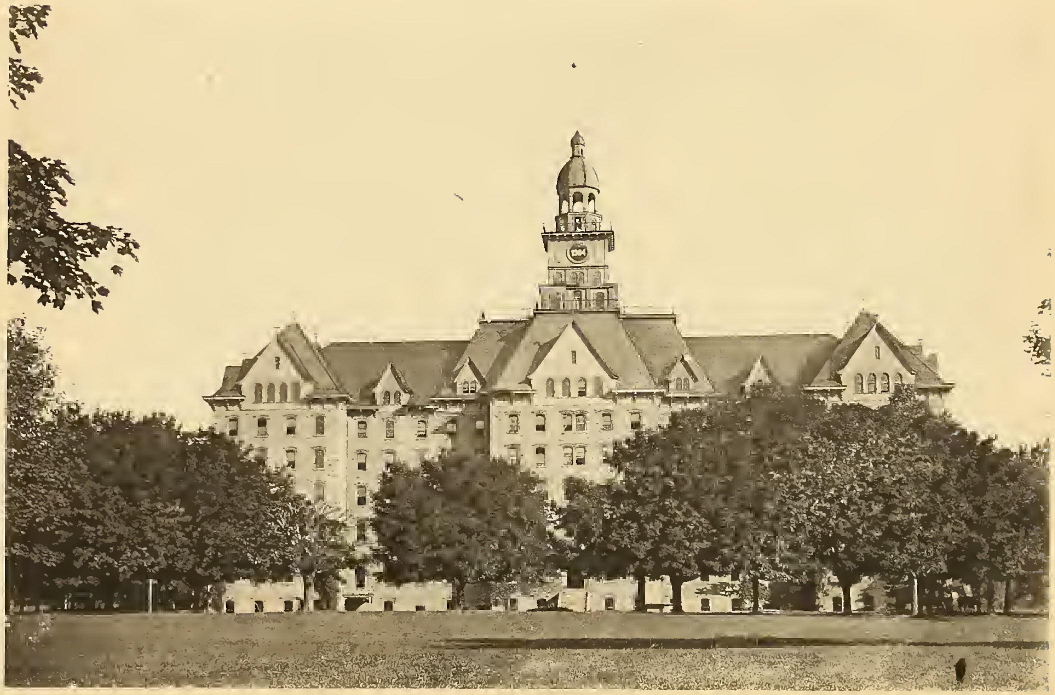
	80–1	90–1	91–2	92–3	93–4	94–5	95–6	96–7	97–8	98–9	99–00	00–1	01–2
Professors, - - - - - -	10	16	16	18	16	20	18	19	19	17	16	17	16
Associate Professors, - - -													3
Assistant Professors, - - -		2	2	5	10	7	11	13	15	15	10	11	12
Instructors and Assistants, - -	5	10	12	15	14	16	22	17	14	14	14	15	14
College Students, - - -	56	126	153	179	181	221	232	253	249	241	281	340	421
Preparatory and Special Students, -	88	83	91	108	136	87	112	94	96	85	83	93	83
Total in attendance, - -	144	209	244	287	317	308	344	347	345	326	364	433	504
Counties represented by Students in attendance, - - - - -	21	37	42	46	50	49	54	51	58	56	58	59	64
Other States and Foreign Countries Represented, - - - -	9	10	14	9	8	7	10	8	11	10	7	7	7
Courses of Study elected by College Students, - - - - -	Not Stated												
Agriculture, - - - -		2	5	1	1	1	7	15	17	11	8	9	12
Biology, - - - - -			1	1	7	7	7	7	11	14	12	14	11
Chemistry, - - - -		9	21	19	15	11	22	25	18	24	31	34	36
Short Course in Chemistry, -						4		1	1	2		1	
Classical, - - - -		†						1	1	2		2	2
General Science, - - -		22	20	20	19	18	20	13	10	6	10	12	14
Latin Scientific, - - -		16	7	8	9	6	8	12	10	8	7	6	5
Mathematics, - - - -							2	5	2	5	2	2	
Philosophy, - - - -								4	5	2	3	1	1
Physical & Electrical Engineering,		15	22	*40	1								
Civil Engineering, - -		37	36	38	18	30	34	35	30	23	32	52	78
Electrical Engineering, - -		3			57	67	64	66	64	68	90	96	133
Mechanical Engineering, -		20	35	44	44	50	45	38	42	45	58	80	103
Mechanic Arts (last year) - -				1						1	1	1	
Mining Engineering, - -					9	21	23	21	18	20	21	25	21
Short Mining, - - - -								2	1		1	3	
Unclassified, - - -		2	6	7	1	6		8	19	10	5	2	4

† Course temporarily dropped.

* Course subdivided by detaching Electrical Engineering.



OLD MAIN BUILDING.



PRESENT MAIN BUILDING.

THE PENNSYLVANIA STATE COLLEGE

SCHOOLS AND COURSES OF INSTRUCTION.

1. **School of Language and Literature:**

   General Science Course,
   Classical Course,
   Latin Scientific Course,
   Modern Language Courses.

2. **School of History, Political Science, and Philosophy:**

   The several subjects included in this school are incorporated more or less extensively into all the four years' courses. A separate course in Philosophy is offered, and other courses may be outlined hereafter. The work in these subjects, however, may be very largely elective.

3. **School of Agriculture:**

   Course in Agriculture (four years),
   Special work in Agriculture,
   Creamery Course (six weeks),
   Dairy Course (six weeks),
   Correspondence Courses (Home Reading and Study)

4. **School of Natural Science:**

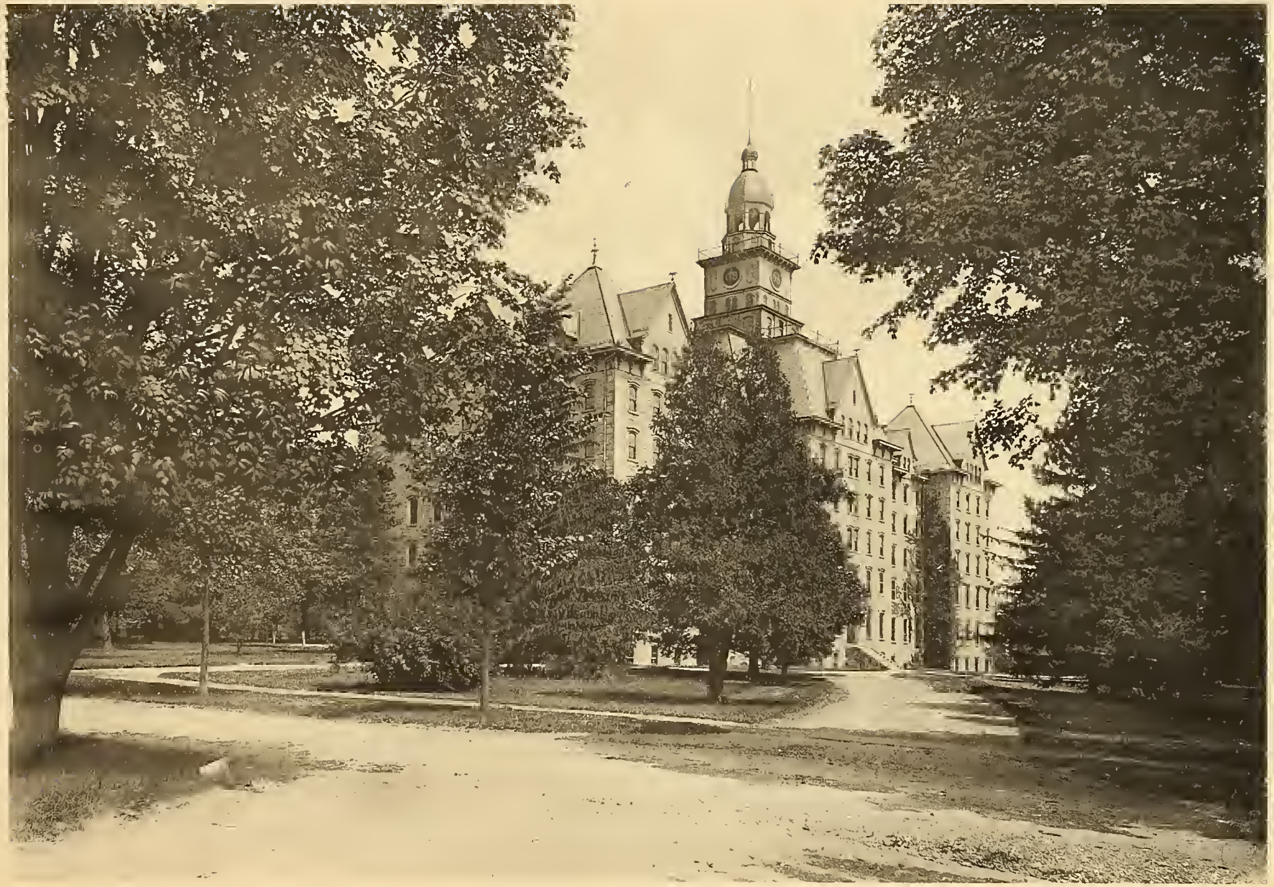
   Course in Biology,
   Course in Chemistry,
   Short Course in Chemistry (two years).

5. **School of Mathematics and Physics:**

   Course in Mathematics,
   Course in Physics.

6. **School of Engineering:**

   Course in Civil Engineering,
   Course in Electrical Engineering,
   Course in Mechanical Engineering,
   Course in Mining Engineering,
   Short Course in Mining (two years),
   Elementary Course in Mechanics (two years).



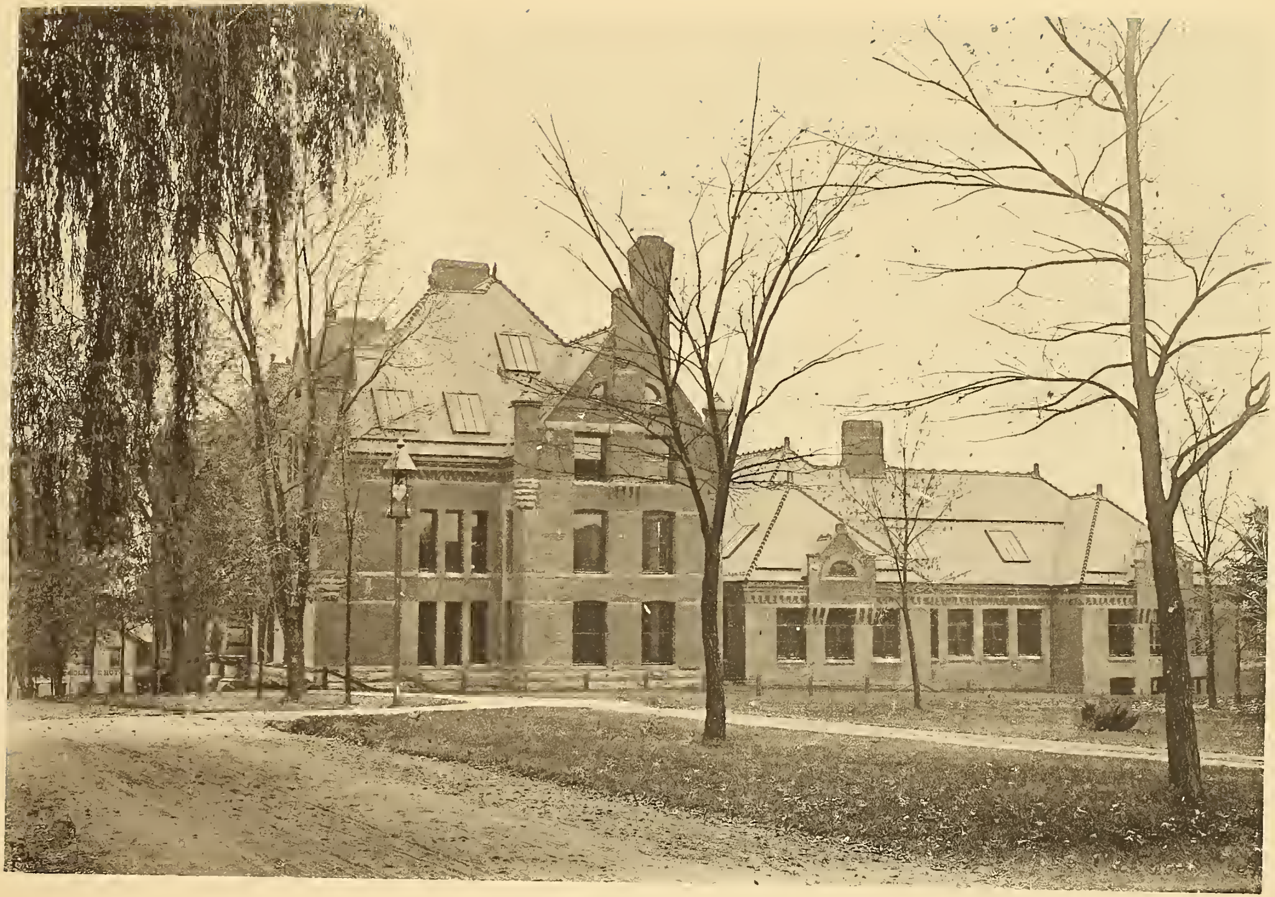
MAIN BUILDING.

SCHOOL OF ENGINEERING.

THE School of Engineering is divided into four departments—Civil, Electrical, Mechanical and Mining. Each of these departments offers a four years' course of study leading to the degree of B. S. Graduates from any department of the Engineering School who pursue a year of successful graduate work at this college in the same line as the undergraduate course taken, or who continue for not less than three years in the practice of their profession, and in either case present a satisfactory thesis, are entitled to the appropriate technical degree, Civil Engineer (C. E.), Electrical Engineer (E. E.), Mechanical Engineer (M. E.), or Mining Engineer (E. M.).

A large and commodious structure of red brick with brownstone finish is the home of the Engineering School. The building covers a ground area of over 27,000 sq. ft. and has a floor space of about 65,000 sq. ft.

Offices, class rooms, drawing rooms, laboratories and shops have been planned to meet the needs of the engineering work, and are well adapted to it. The lighting is excellent, and the best modern facilities are provided throughout.



ENGINEERING BUILDING.

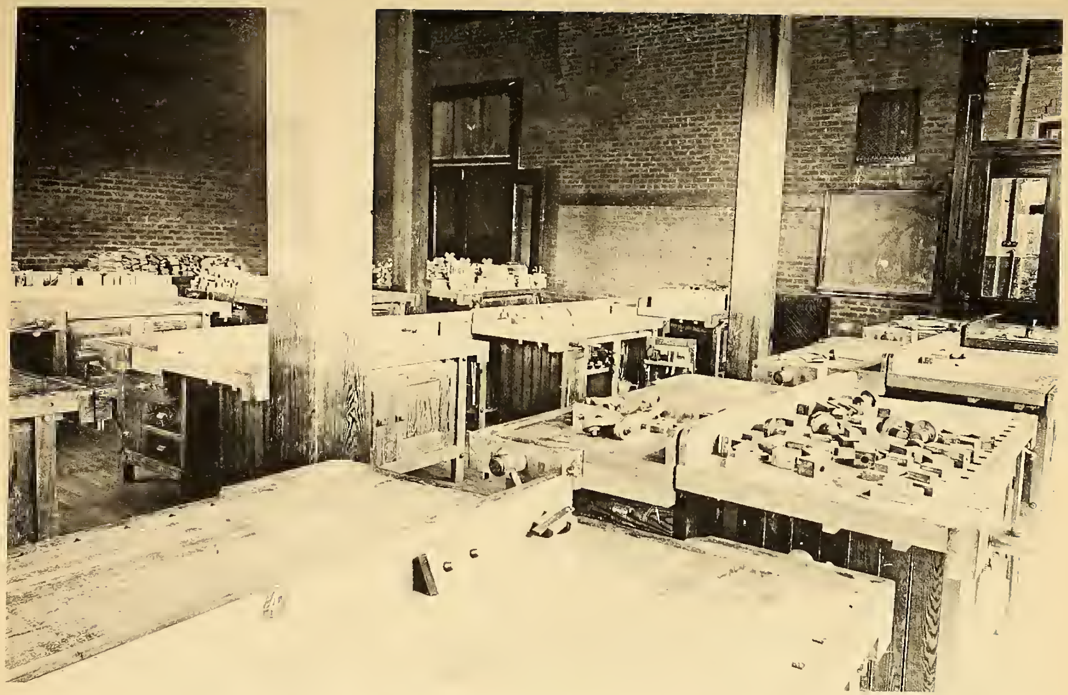
SHOPS.

IN the rear part of the Engineering Building are well lighted and well equipped shops. They consist of carpenter, wood turning and pattern making shops, a forge room, a foundry and a machine shop. Students of the Engineering, the Agricultural and some other courses, are required to take shop work, the kind of work and the number of hours given to it depending upon the course pursued.

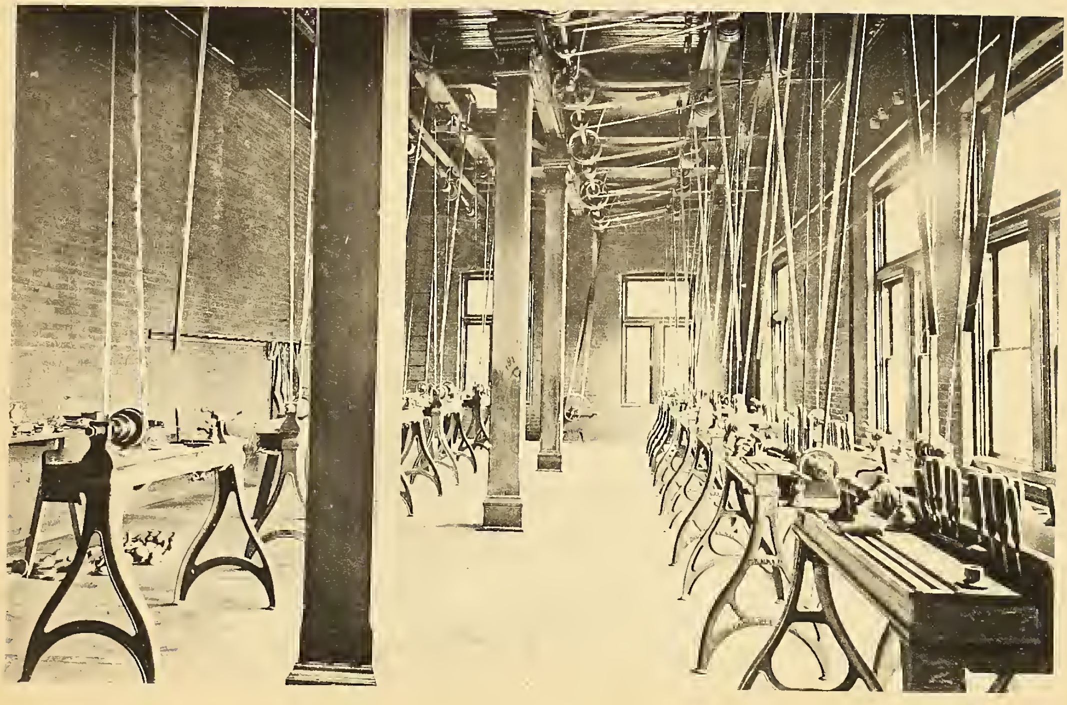
REAR OF ENGINEERING BUILDING.

CARPENTRY is given in the the different courses as follows: Civil Engineering—34 hours; Electrical Engineering—85 hours; Mechanical Engineering—85 hours; Mining Engineering—34 hours; Agriculture—34 hours; Philosophy—51 hours; Mathematics—51 hours; General Science—68 hours; Classical—51 hours; Latin Scientific—68 hours.

WOOD Turning is given in the different courses as follows: Electrical Engineering—59 hours; Mechanical Engineering—59 hours.



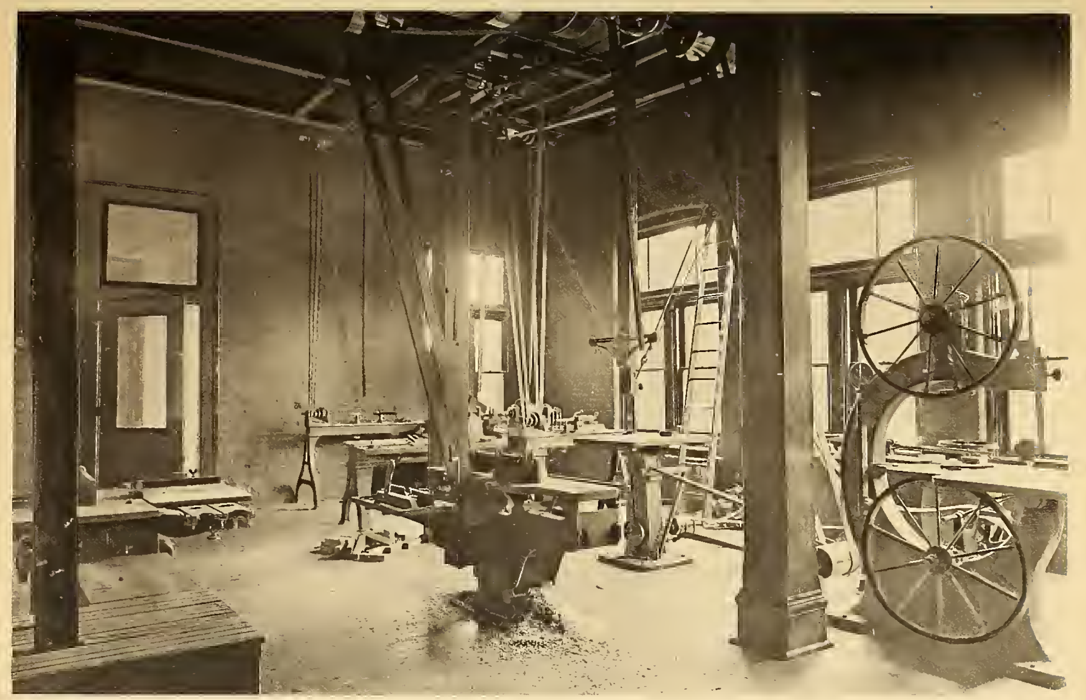
CARPENTER SHOP.



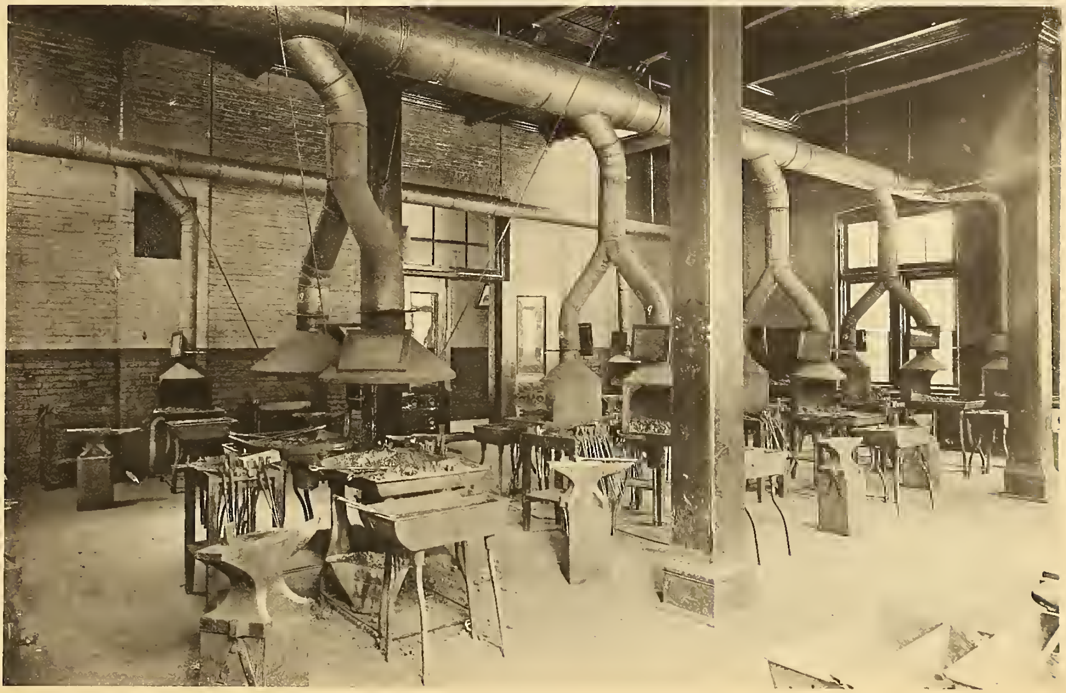
WOOD TURNING SHOP.

PATTERN Making is given in the different courses as follows: Electrical Engineering—50 hours; Mechanical Engineering—50 hours.

FORGING is given in the different courses as follows: Civil Engineering—17 hours; Mechanical Engineering—102 hours; Electrical Engineering—68 hours; Mining Engineering—17 hours; Agriculture—17 hours.



WOODWORKING MACHINERY.



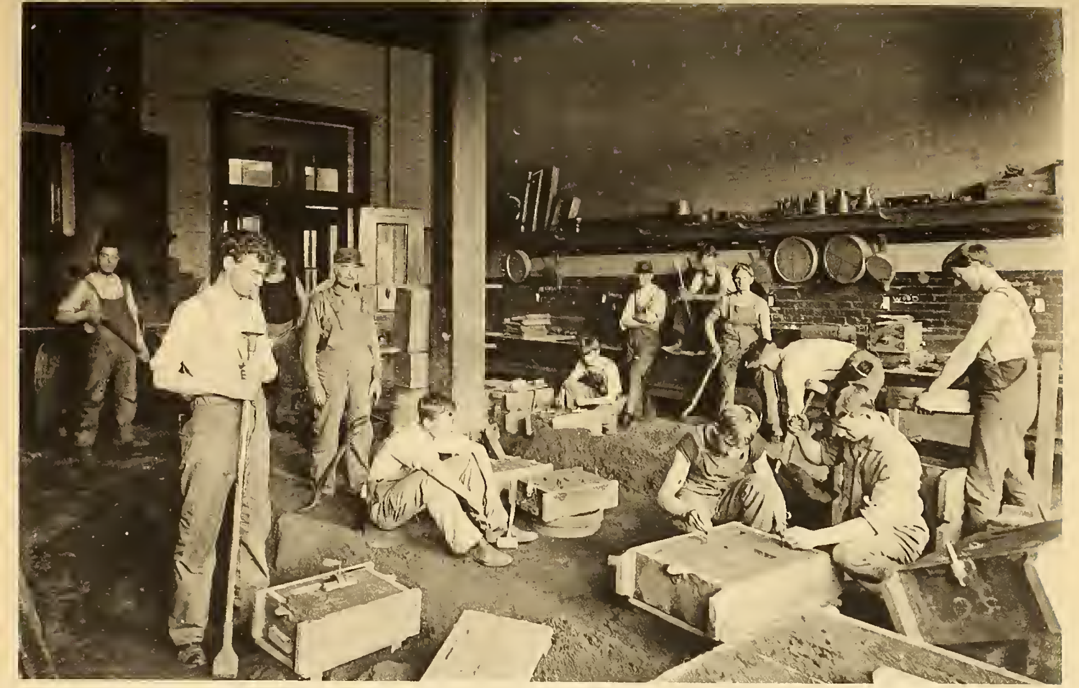
FORGE SHOP.

FOUNDRY work is given in the different courses as follows: Electrical Engineering—59 hours; Mechanical Engineering—59 hours.

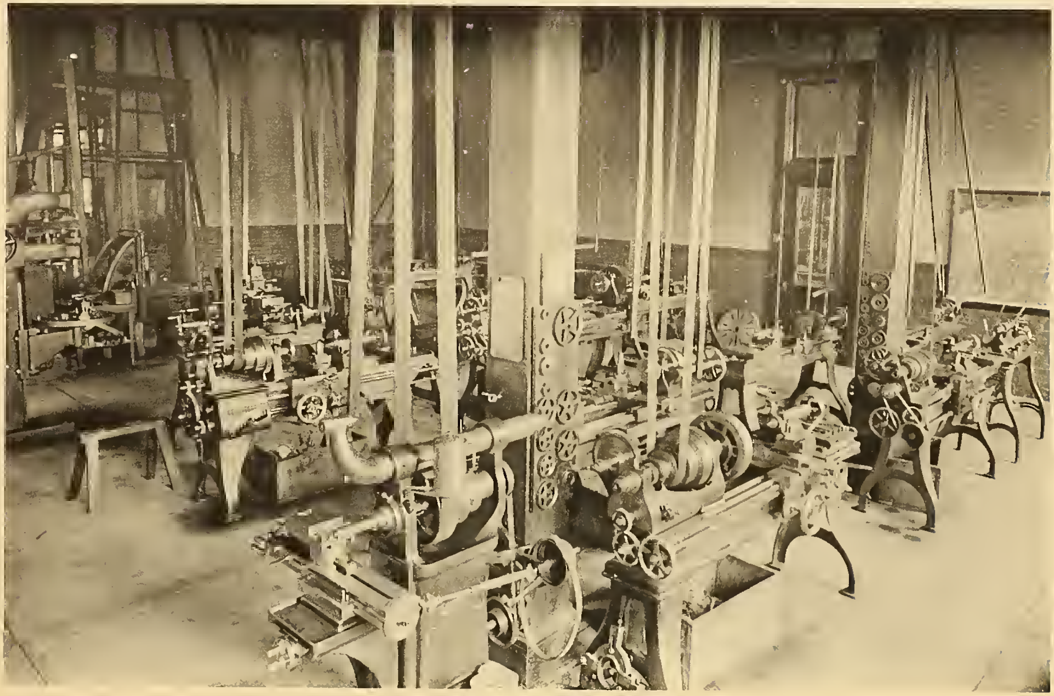
CHIPPING and Filing is given in the different courses as follows; Civil Engineering—17 hours; Electrical Engineering—25 hours; Mechanical Engineering—25 hours; Mining Engineering—17 hours; Agriculture—17 hours.

Machine Tool Work is given in the different courses as follows: Electrical Engineering—102 hours; Mechanical Engineering—136 hours.

Machine Construction is given in the course in Mechanical Engineering—40 hours.

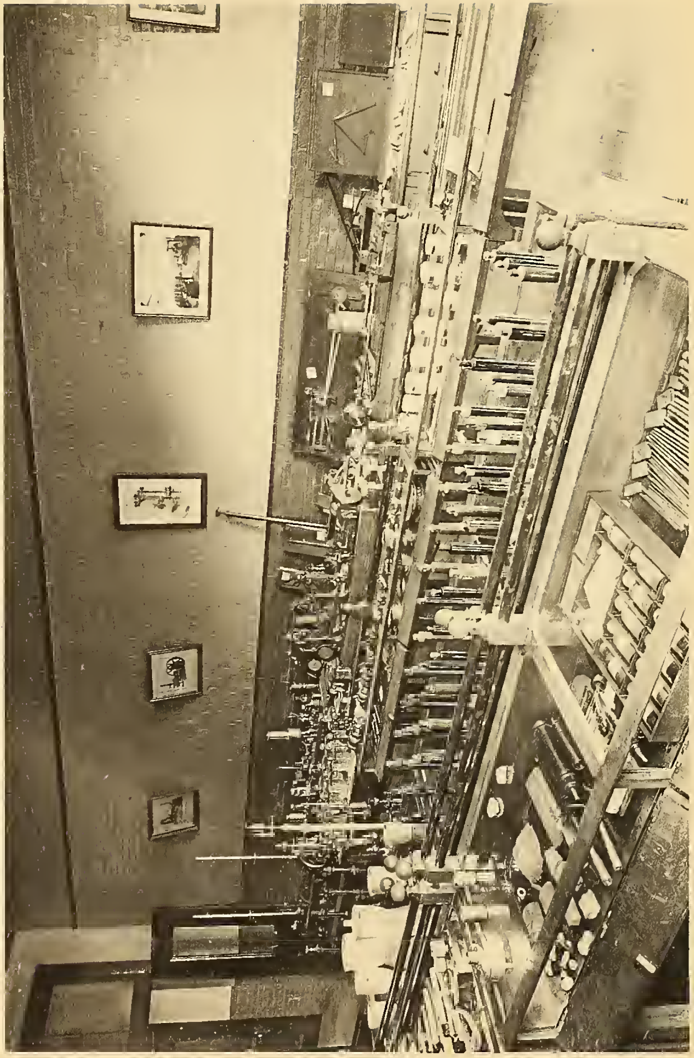


FOUNDRY.

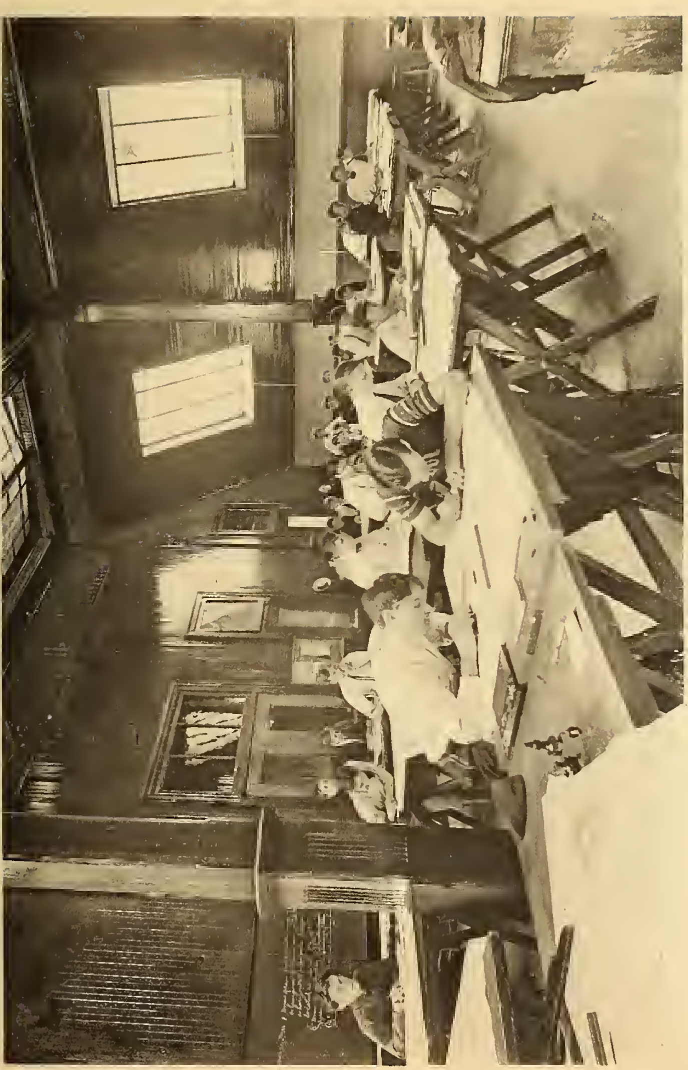


MACHINE SHOP.

WELL designed lecture and drawing rooms, photographic and blue print outfits and lecture lantern for slide illustration, museums containing machine parts, models and special appliances to be used in class room work, an engineering library supplied with books and periodicals, special laboratories and shops are all admirably adapted to their uses, in the work of all the departments.



MECHANICAL MUSEUM.

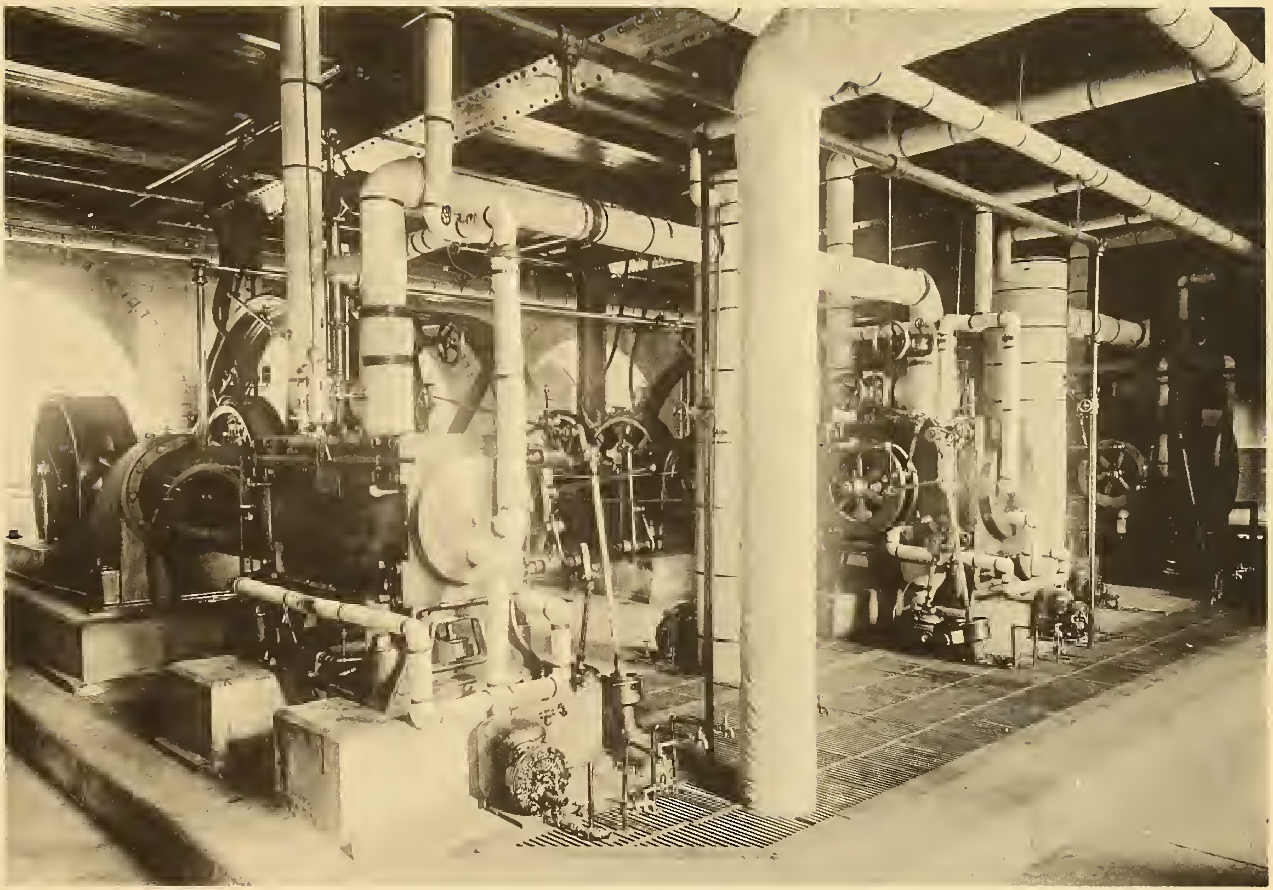


DRAWING ROOM.

DEPARTMENT OF MECHANICAL ENGINEERING.

THE course in Mechanical Engineering affords a comprehensive training in the design and construction of all kinds of machines, and in matters relating to the generation, transmission and utilization of Power. The main object of the course is to give a thoroughly *practical* and *applicable* knowledge of the principles and laws pertaining to these subjects. To this end practical work and theory are so correlated as continually to throw light upon and supplement each other. By this means a broad foundation is afforded upon which the graduate may build a successful professional career. His course in Mechanical Engineering will be of value to him, not only as a training in engineering proper, as the term is usually understood, but also as a preparation for the management or superintendence of any large industrial enterprise.

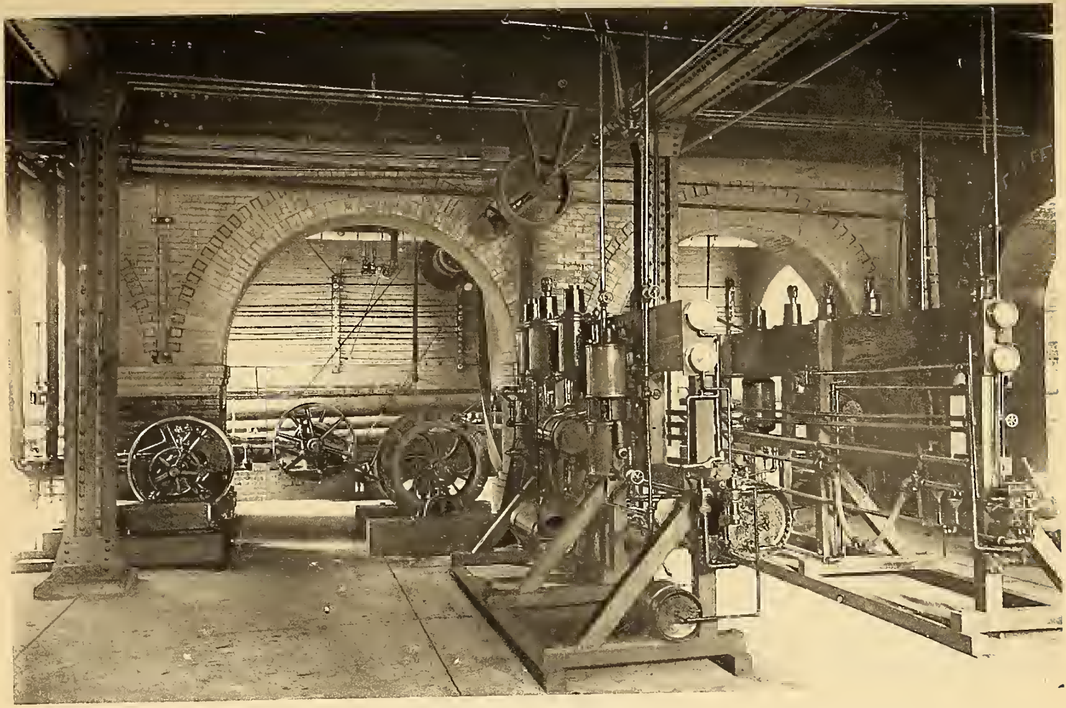
The steam laboratory has an area of over 2,600 sq. ft. and is equipped with the following apparatus: A triple expansion Reynolds Corliss Engine of 150 H. P. (built especially for this laboratory, from other and different types of engines), a steam turbine, absorption brakes, surface condensers, steam pumps, steam and coal calorimeters, indicators, gauges, injectors, planimeters, crater meters, apparatus for testing and calibrating gauges and indicators, chronograph, etc., etc.



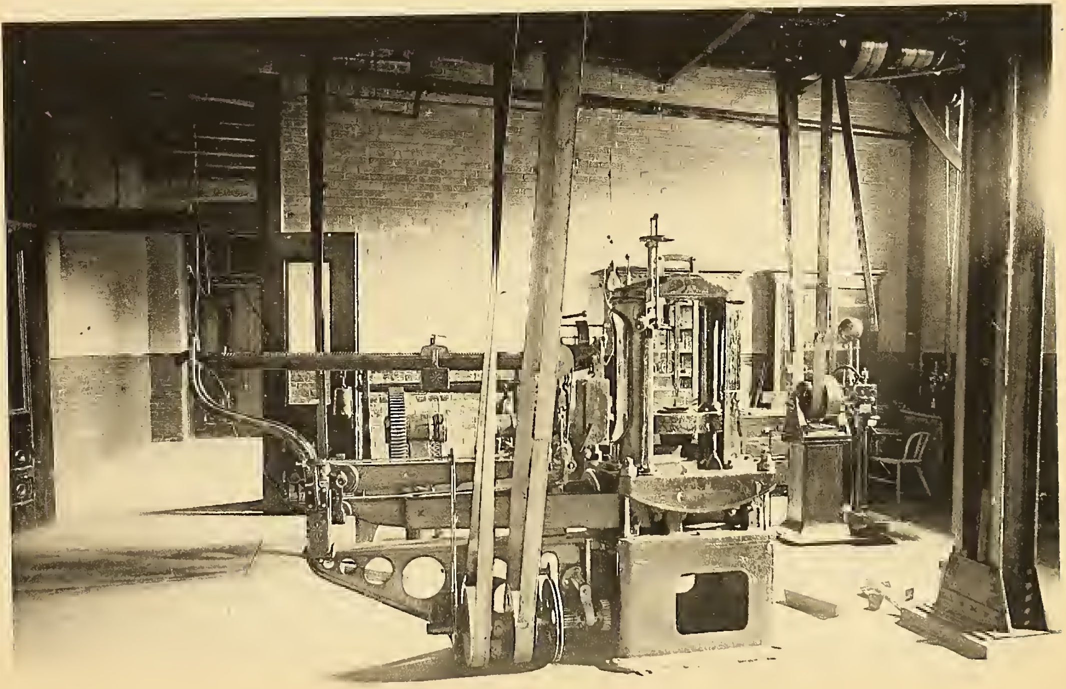
TRIPLE EXPANSION EXPERIMENTAL CORLISS ENGINE.

FOR work with air, the laboratory is supplied with an Ingersoll air compressor, which compresses to 2,000 lbs. per sq. inch, with complete sets of Westinghouse and New York air brakes, and with an air accumulator, air meters, air drills, air riveters, air receiving tanks, etc. Also, Rider and Ericsson Hot Air Engines and gasoline engines with the necessary equipment for experimental work.

For testing materials there are various machines for determining the strength of iron and steel under tension, compression, torsion and transverse stress, up to a thousand pounds. Also, appliances for ascertaining stretch, deflection, twist, etc. Lubricant testing machines are in this laboratory for the determination of the flash point, burning point and viscosity of lubricating oils and greases.



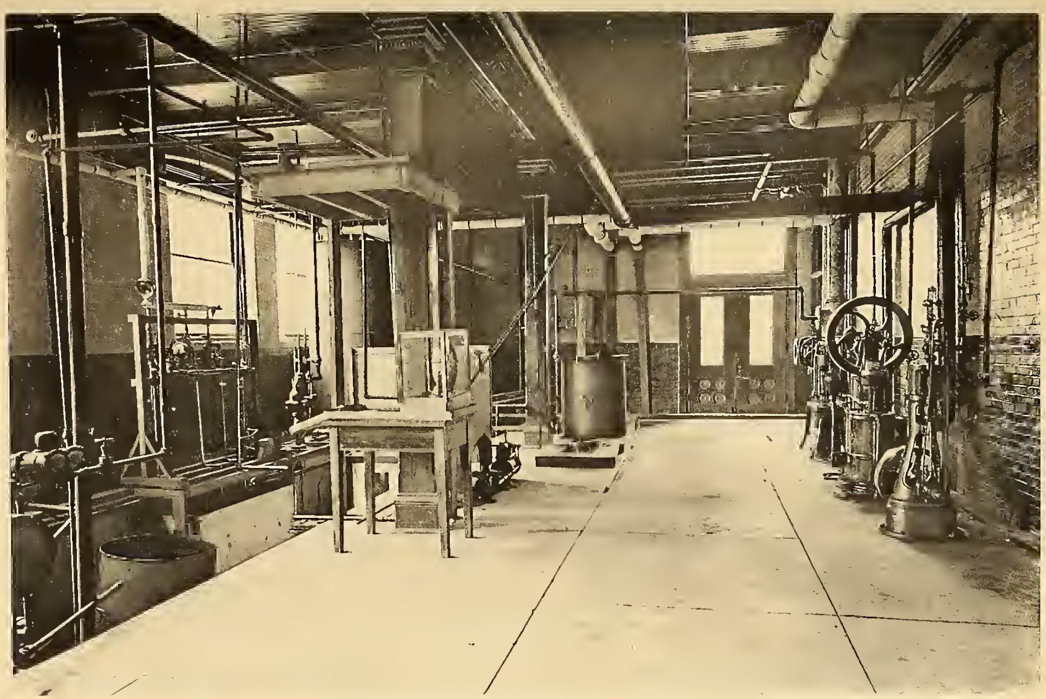
PNEUMATIC APPLIANCES.



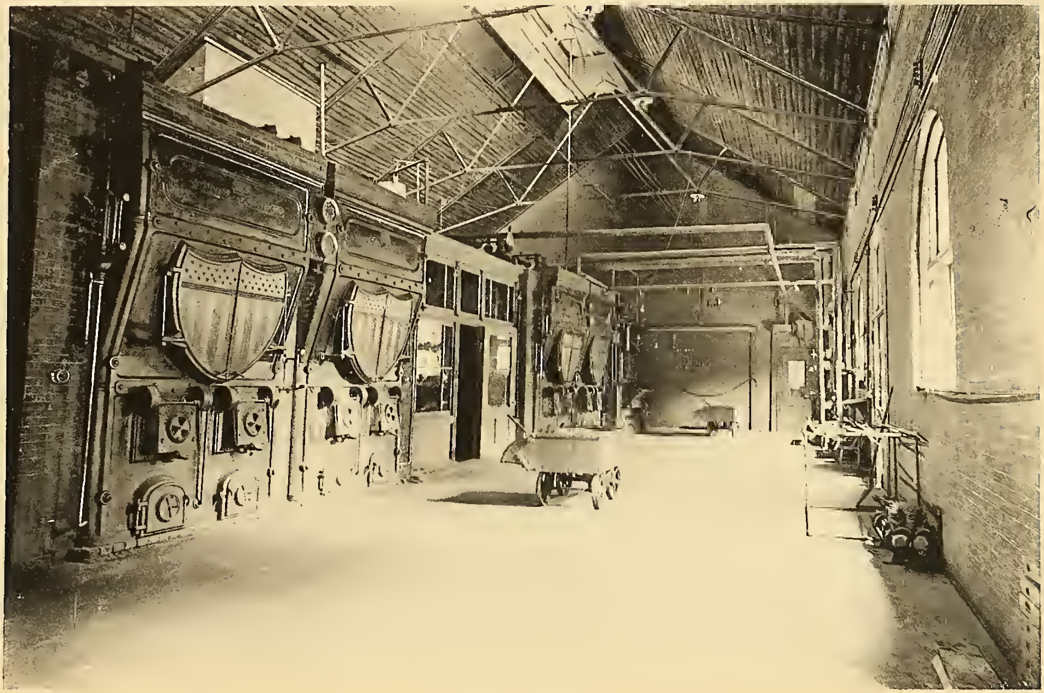
MACHINES FOR TESTING MATERIALS.

FOR use in conjunction with the Civil Engineering Department, the hydraulic laboratory is supplied with a stand pipe, wiers, measuring tanks, scales, current meters, etc., and is arranged for testing centrifugal pumps, direct acting pumps, pulsometers, hydraulic rams, impulse wheels and reaction wheels and all appliances required in making tests.

There are, also, available for work with steam, five 80 H. P. boilers, one 150 H. P. Heine Boiler, designed for experimental work, carrying 300 lbs. pressure, one Westinghouse Compound Engine, a 50 H. P. Ide Engine and a number of direct action and deep-well pumps.



HYDRAULIC MACHINERY LABORATORY.



BOILER ROOM.

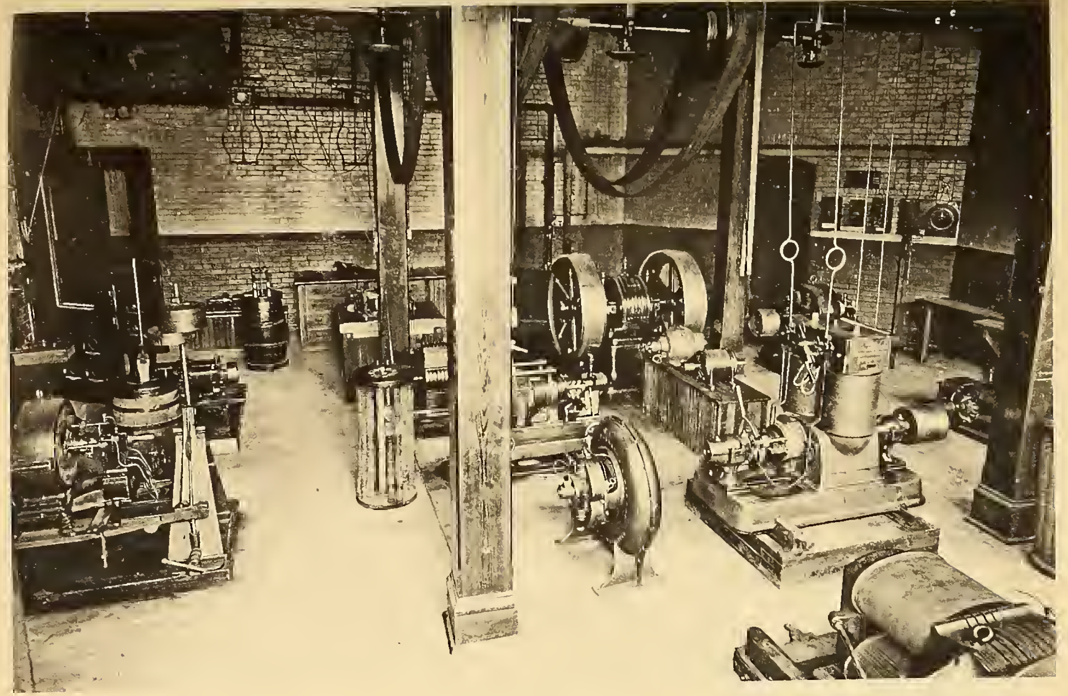
DEPARTMENT OF ELECTRICAL ENGINEERING.

THE department of Electrical Engineering was established in the spring of 1893 for the purpose of offering suitable courses to students desiring entrance to the profession of electrical engineering. Since that date the College has been carefully selecting and gathering together laboratory apparatus and other equipment and is now able to give thorough instruction in electricity and magnetism, dynamo electric machinery, distribution of power, electric lighting, electric railways, batteries, telephones and telegraphs, electro-chemistry and other subsidiary lines in electrical engineering.

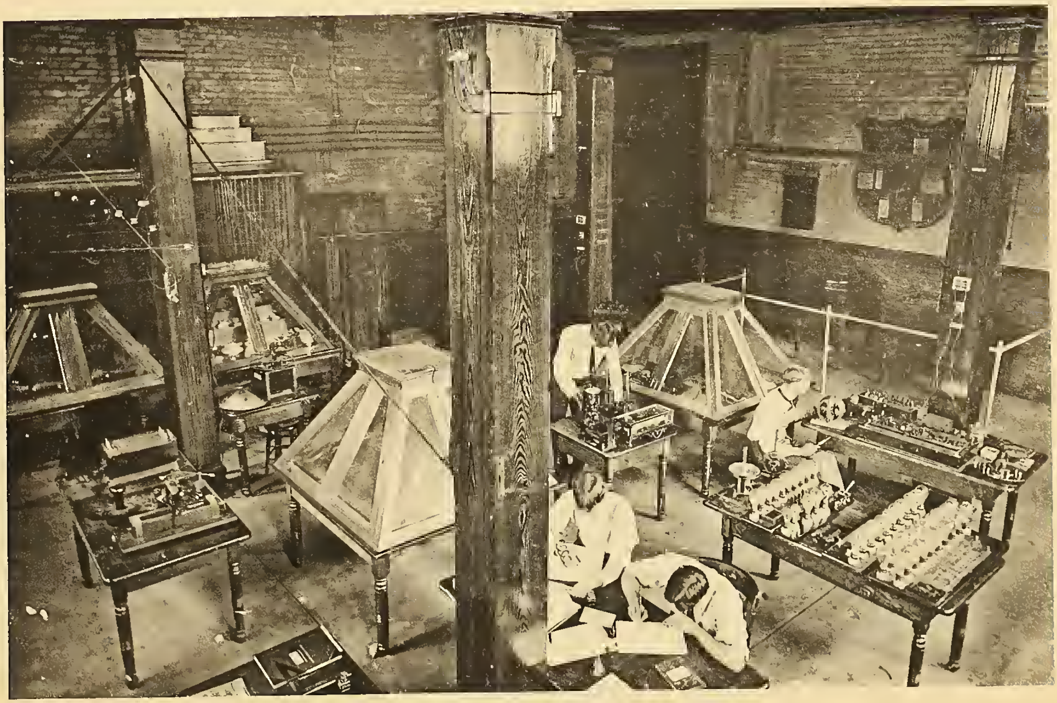
The Department has two excellent class rooms, a well lighted drafting or designing room and a general office in the Engineering Building. Its laboratories are located in the basement of the shops at the western end of the same building and consist of three rooms.

One of these latter rooms is used as a dynamo laboratory and contains a number of direct current dynamos and motors, alternators including polyphase equipment, transformers, arc lighting machinery, an electric welder, a steam driving engine, switch boards, rheostats, etc., and various other appliances needed for college instruction in electrical engineering.

Another large room is devoted to general testing. In this room are to be found galvanometers, bridges and resistance boxes, a photometer, a 60,000 and a 10,000 volt transformer, a large range of portable ammeters, voltmeters and wattmeters for both direct and alternating currents, Kelvin balances for calibration purposes and many other pieces of special testing apparatus.



DYNAMO LABORATORY.

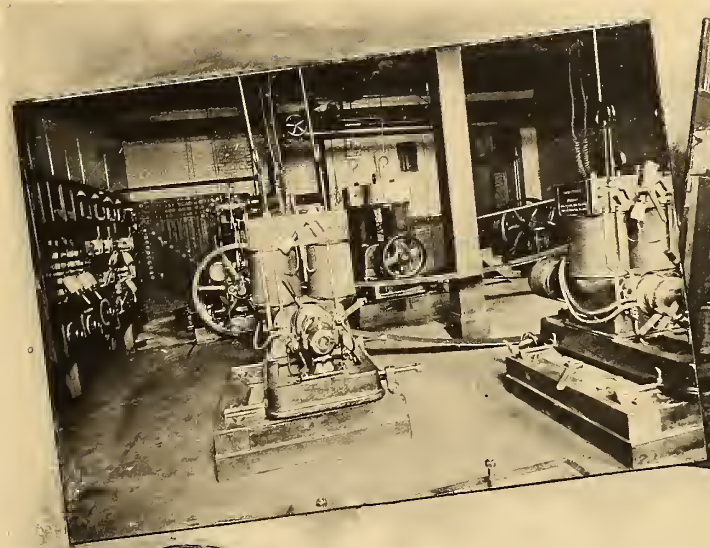


ELECTRIC TESTING LABORATORY.

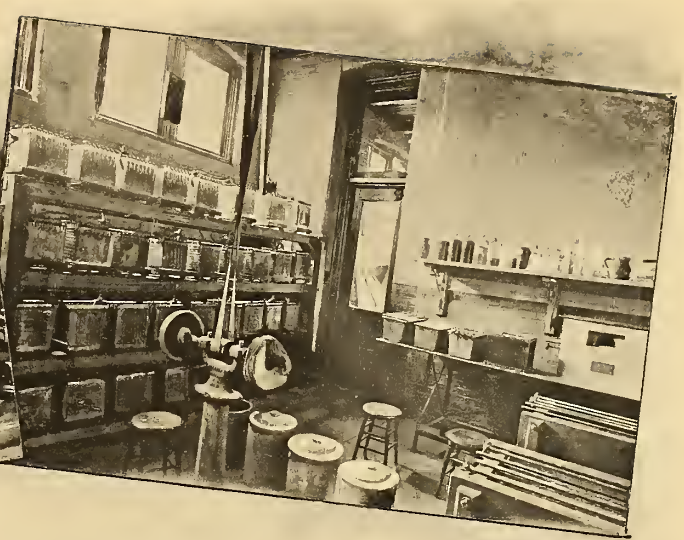
THE third room is used for electro-chemical or electro-metallurgical purposes. In this room are installed a 60 cell chloride storage battery, which is used for furnishing absolutely constant potential for experimental work; three large vats for electro-chemical work of the rougher character, and two small porcelain lined vats for more delicate operations; an electrolytic furnace for using fused electrolytes and for obtaining very high temperatures; a buffing outfit; an electrolytic generator furnishing low pressure and large currents; a driving motor and a supply of chemicals suitable for carrying on electro-chemical investigations.

The electric light and power plant of the College, which is located in the east corner of the Engineering Building, and a large number of motors distributed throughout the various College buildings are used in giving instruction in the more practical phases of this work.

In addition to the equipment described, an experimental electric railroad about half a mile in length has been installed upon the tracks of the Bellefonte Central Railroad. The experimental car for use upon this track is equipped with a Peckham truck, G. E. 800 motor, K 2 controller and American car heaters. Plans are now in preparation for the installation of a street railway laboratory, in connection with the proposed enlargement of the entire Engineering "plant."



ELECTRIC POWER AND LIGHTING PLANT.



ELECTRO-CHEMICAL ROOM.

EXPERIMENTAL TROLLEY LINE.

DEPARTMENT OF CIVIL ENGINEERING.

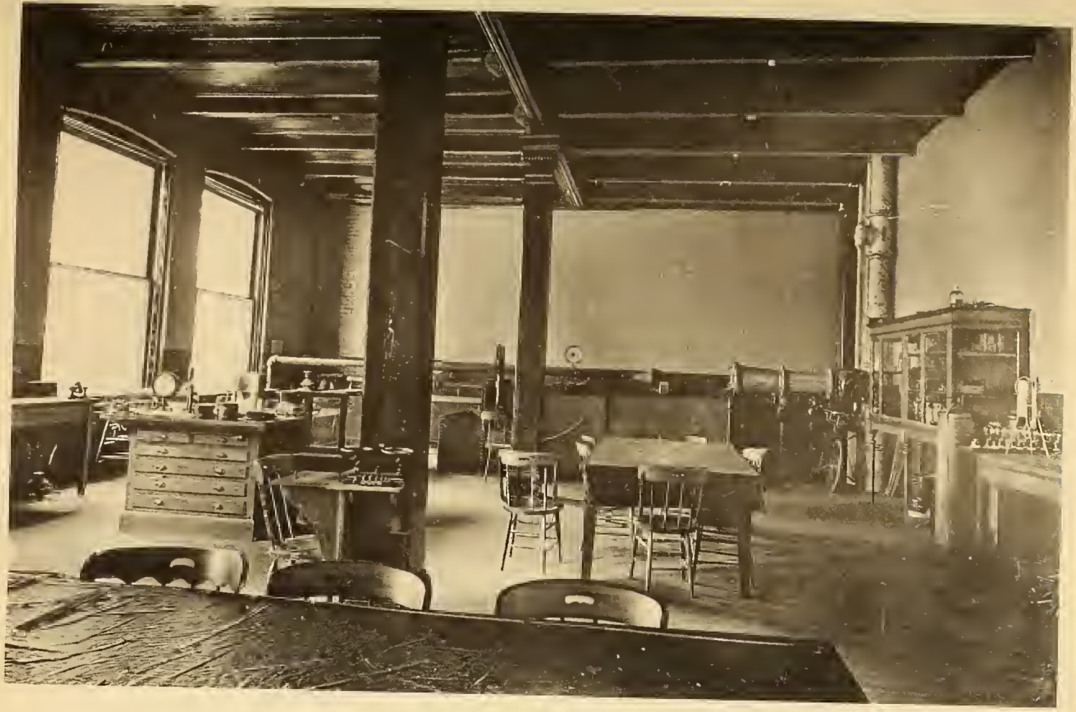
THE work of this course is designed to give the student a thorough training in the principles that underlie the various branches of Civil Engineering, and at the same time to teach him to apply these principles to the practical problems with which the Engineer has to deal. To this end the work in the field, drawing-room and laboratory is carried on parallel with that of the class-room.

A student who satisfactorily completes this course has laid the foundation for a successful career in any one of the following lines of work: topographical engineering, including all forms of surveying; railroad construction and maintenance; river and harbor works; development of water power; municipal engineering, including the construction of water works, sewers, roads and pavements; and the design and construction of bridges and roofs, walls and dams.

The Department is well equipped with transits, levels, compasses, plane tables and other instruments used in surveying. The location of the College is such that the opportunities afforded for carrying on field operations of all kinds are exceptionally favorable.

For the work in hydraulics the Department is equipped with current meters for measuring the velocity of streams and, in the Hydraulic Laboratory, a stand pipe eighty feet in height furnishes the necessary head for conducting experiments on the flow of water through pipes and orifices under varying conditions.

In the laboratory for testing materials each student carries on a series of tests for the determination of the physical properties of iron, steel, wood, cement, brick and stone.



HYDRAULIC LABORATORY.

GROUP
OF
SURVEYORS.

DEPARTMENT OF MINING ENGINEERING.

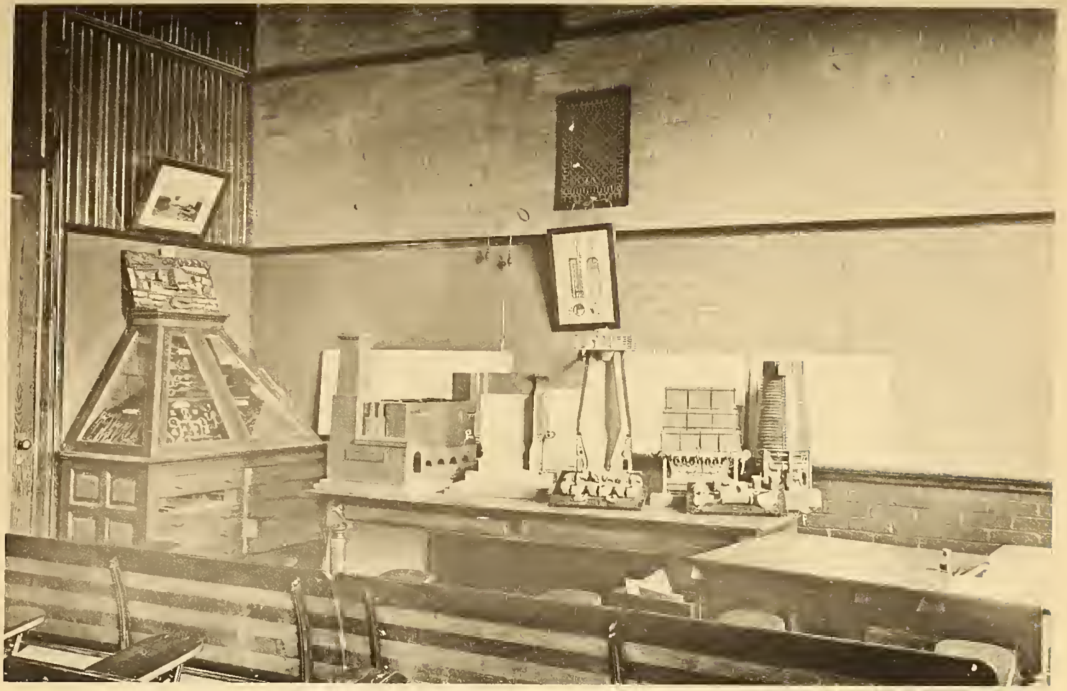
THE instruction in this department relates to the origin, mode of occurrence, discovery, taking out of the earth, and preparing for market all useful mineral substances, like antimony, arsenic, asbestus, asphalt, building and decorative stones, clays, coal, copper, gems, gold, graphite, grinding and polishing materials, iron, lead, limes and cements, manganese, mercury, mica, mineral paints and medicines, natural fertilizers and gas, nickel, petroleum, platinum, salts, silver, soapstone, sulphur, tin, water, zinc, etc., etc.

The range of studies bearing upon the immense mineral industries of the State and Nation is so great that no one can compass them all in his college course. It thus becomes necessary to lay out certain lines and direct each student along the path which seems best suited to his ability, and which will enable him to cope with the practical problems of his future occupation.

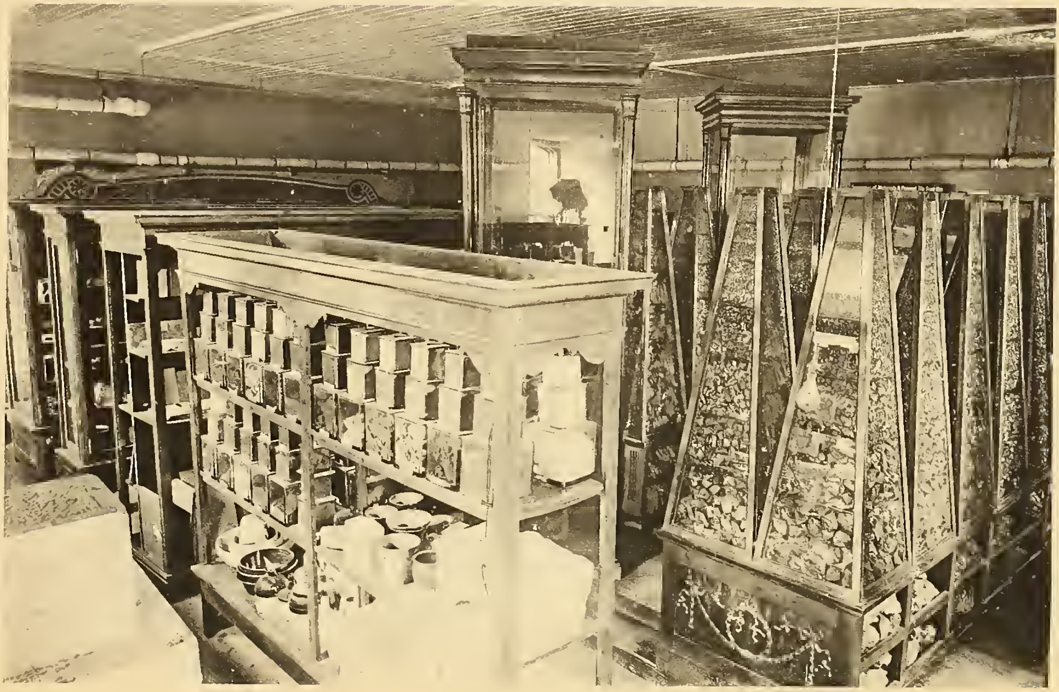
The subjects taken in the course naturally group themselves into Physics, Chemistry, Assaying, Metallurgy and Ore Dressing; Mathematics and Civil, Mechanical, Electrical and Mining Engineering; Drawing and Designing; Crystallography, Mineralogy, Petrography, Geology, Mining, etc.

Mineralogy, Petrography and Geology form the alphabet, or the basis of all mining, the same as mathematics and physics do of engineering, and chemistry of assaying and metallurgy.

The instruction in assaying, metallurgy, ore dressing, crystallography, mineralogy, petrography, geology and mining is given in the laboratories and lecture rooms of the department, while the other subjects in the course are taught in the well-equipped laboratories of the departments to which those subjects properly belong. Throughout the entire course the effort is to make the instruction as practical as possible, so that the student may learn not only the *why* but the *how* in each subject.



LECTURE ROOM—METALLURGY.



MINERAL EXHIBIT.

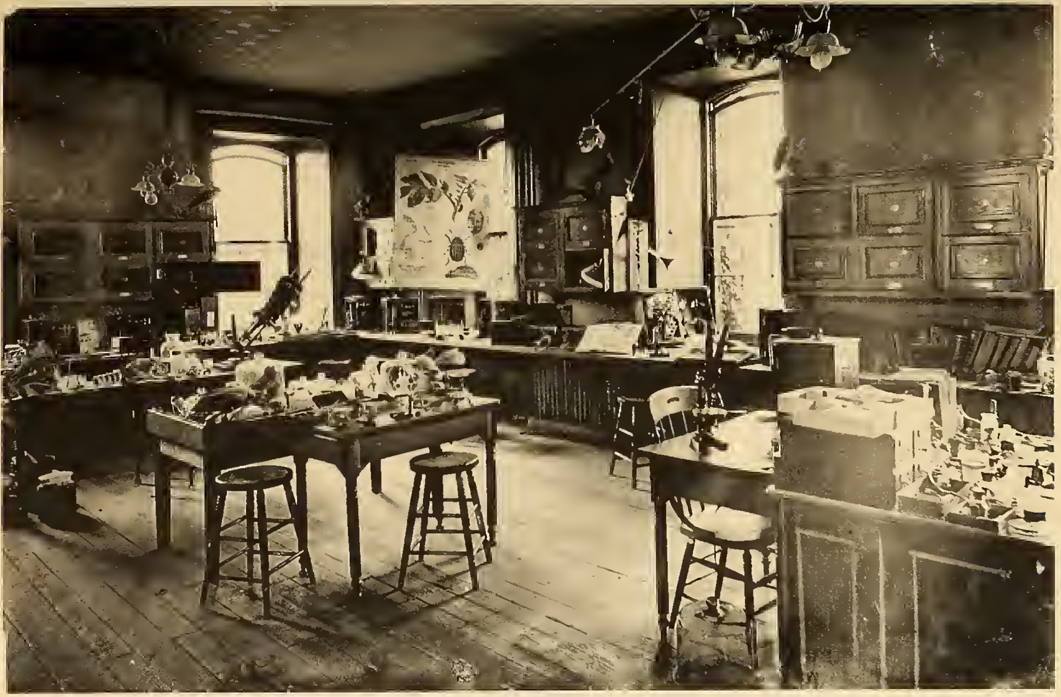
DEPARTMENT OF ZOOLOGY.

THE Department represents the subjects of General Biology, Mammalian and Human Anatomy, Osteology, Physiology, Histology, General Zoology, Entomoly, Embryology, Evolution, etc. A study of these subjects gives the students a good knowledge and understanding of this side of Natural History and General Biology, and equips them as (1) teachers of special subjects in Nature Study, (2) well-educated preparatory medical students, qualified to obtain credit for the first year's studies in medical schools and (3) investigators prepared for scientific positions under the State and United States Governments, and trained to make independent investigations in various branches of their subjects.

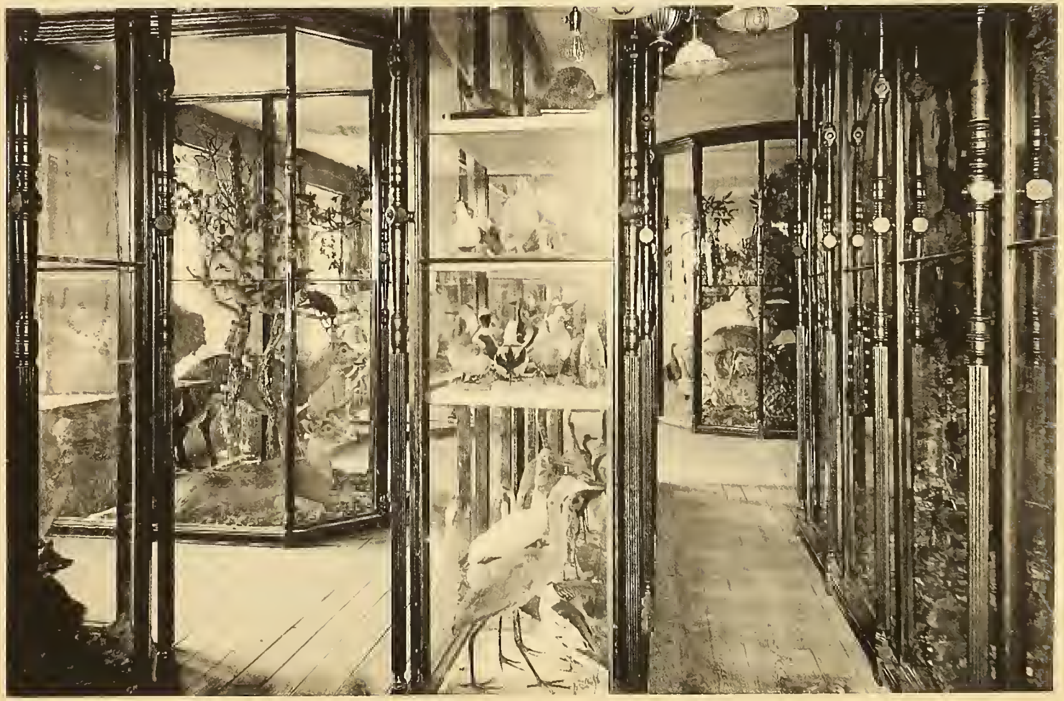
Besides the work in the laboratory, students are taken on excursions in the fields and woods where they come in direct contact with nature and natural life. Specimens collected on these trips are preserved, studied and classified in the laboratory. Students are also trained in methods of bibliography and for this purpose a Departmental library is accessible.

The Department is equipped with models, charts, re-agents, microtome, camera lucidas, micro-photographic outfit, dark room and accessories, collecting apparatus, field glasses and much other apparatus.

The Zoological Museum was established in connection with the Department of Zoology and is of great utility to students. Here are gathered specimens representing nearly all species of birds and animals found in Pennsylvania, mounted according to the Group System. In this room are also many preparations of anatomical material and alcoholic specimens for students' use.



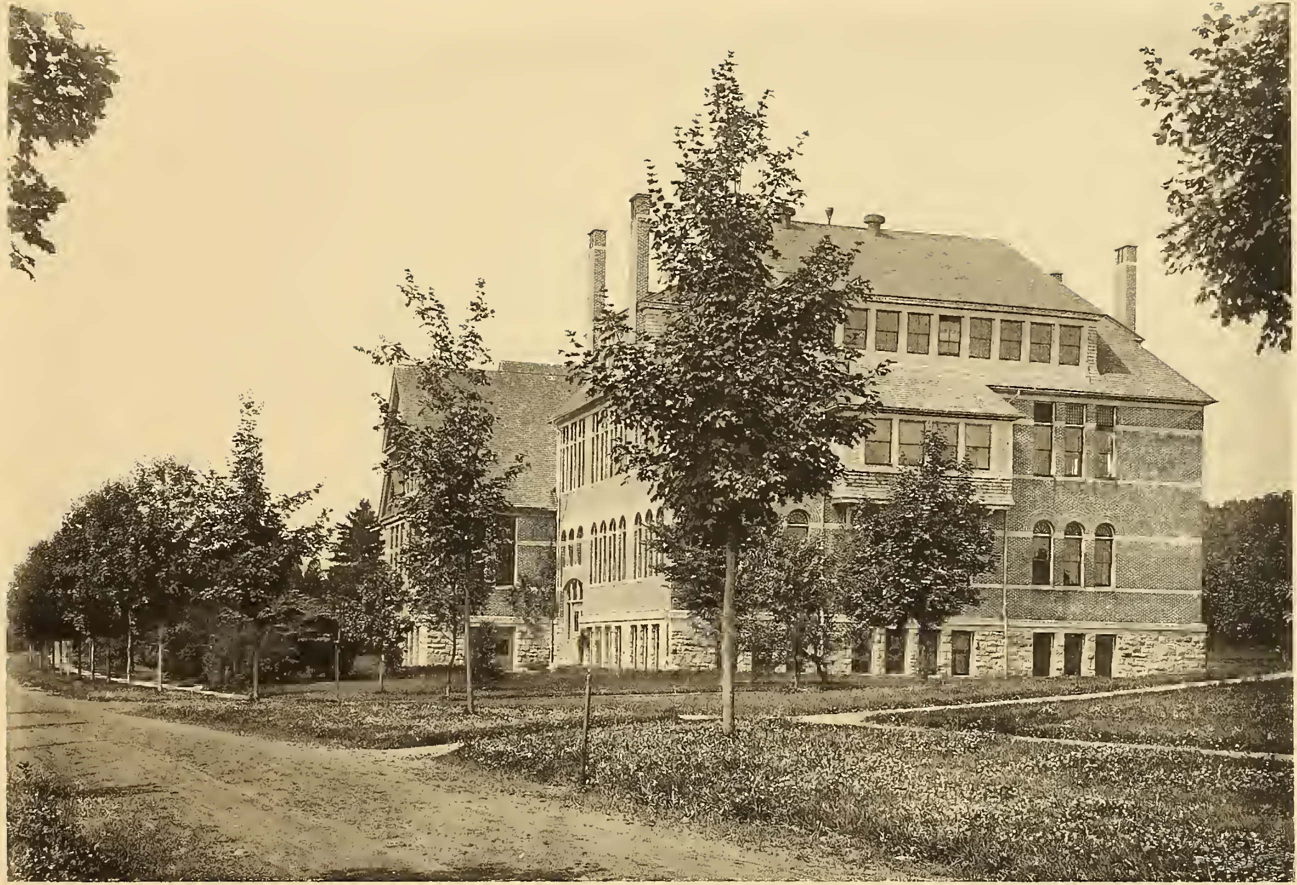
BIOLOGICAL LABORATORY.



MUSEUM.

DEPARTMENT OF CHEMISTRY.

THE founder and first President of the College, Dr. Evan Pugh, having been a chemist of world-wide reputation, the Department of Chemistry is as old as the College itself. Its home for the last twelve years has been the building shown opposite, at first large and commodious enough, but now, owing to great increase in the number of students, filled to overflowing at every point. Light and airy rooms, however, together with an equipment complete in all kinds of apparatus for both elementary and advanced chemical practice, as well as stock rooms well supplied and constantly replenished with all sorts of chemicals, enable our work to progress satisfactorily and our Trustees make liberal provision for expansion as rapidly as we require increased space.

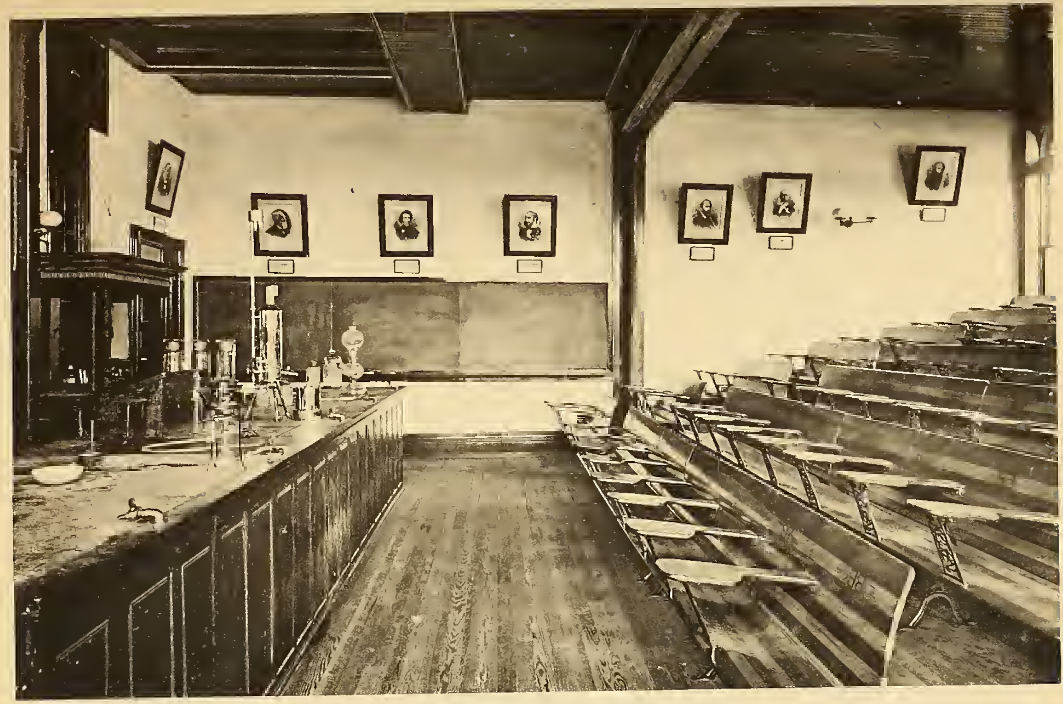


CHEMISTRY BUILDING.

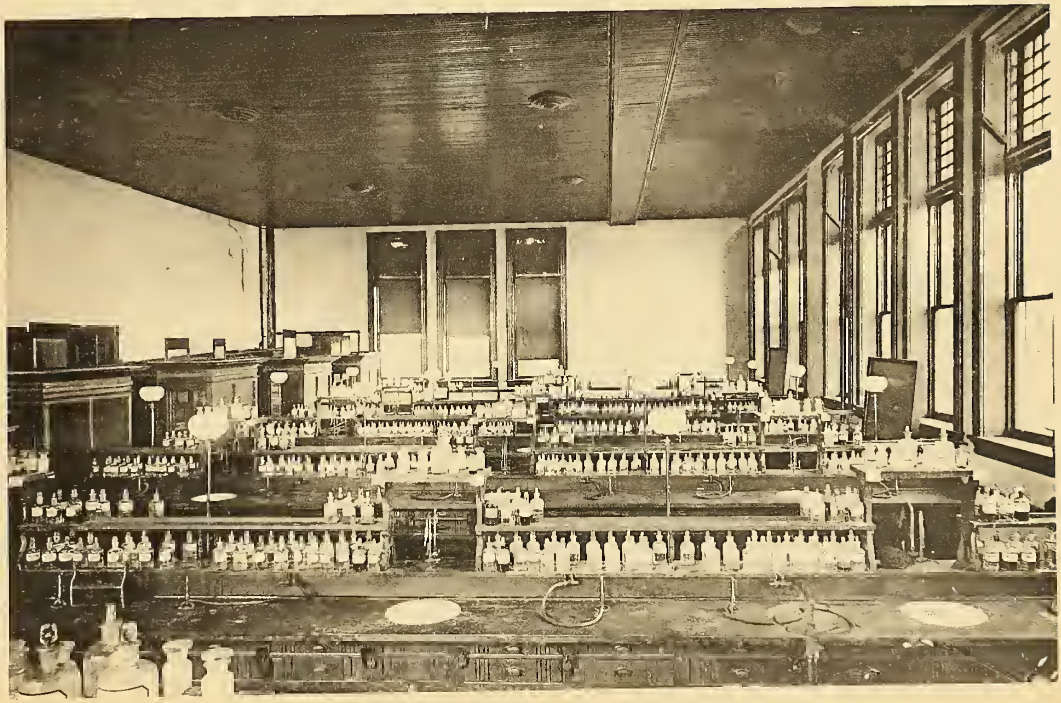
INSTRUCTION in Chemistry is given by lectures, recitations, conferences and laboratory exercises. For a few months, when the student is a beginner, illustrative lectures accompanied by copious quizzing is the most important and efficient means of instruction. Later, after the student is well started in the elements of the science, constant, unremitting and thoughtful laboratory practice becomes essential.

Our laboratories for beginners accommodate rather more than a hundred students in one section. Students here pursue their chemical work through Qualitative Analysis, always under the supervision of two or three instructors and with frequent quizzes which search into the purposes and results of the work, correct errors of individuals and direct the efforts of all.

All students, in whatever course enrolled, take Chemistry up to this point, the middle of Sophomore year.



LECTURE ROOM—CHEMISTRY.

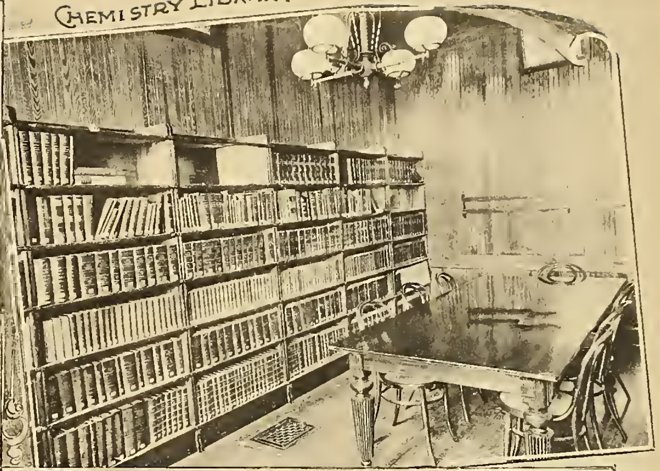


INALITATIVE LABORATORY.

MORE advanced students, commencing with the second half of Sophomore year, are taught different branches of chemical science appropriate to the course which they elect. Students in Agriculture, Biology, Chemistry, Mining and Electricity have Quantitative Analysis, in order to become familiar with the art of determining the relative amount of each constituent in any substance which may be placed under analysis. Biologist and chemists receive instruction in Organic Chemistry, a subdivision of our science of enormous importance in industry and art. Chemists and miners study Assaying, to know the methods by which the precious metals are extracted from the native rock and weighed and calculated to percentage results, while chemists and mechanical engineers take Gas Analysis, to become skilled in determining the composition of gases of any source—natural gas, coal gas, flue gas, air, furnace or producer gas, etc., etc.

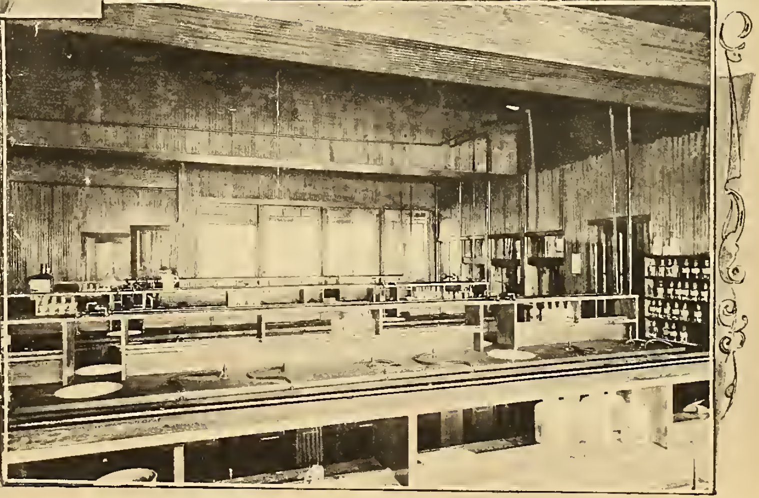
Further, before a chemist is graduated from The Pennsylvania State College, he must have successfully completed courses in Water Analysis, Photographic Chemistry, Oil Analysis, Preparations both Organic and Inorganic, Dye Stuffs, Iron and Steel, Sanitary Chemistry, Industrial Chemistry and many more branches, the complex of which is but a foretaste of the great and growing Chemical Industry of the Twentieth Century.

ORGANIC LABORATORY.



CHEMISTRY LIBRARY

BALANCE ROOM.



INANTITATIVE LABORATORY.

DEPARTMENT OF PHYSICS.

THE studies in Physics in the full course are

1. Elementary Dynamics (Mechanics) and Wave Motion. These two subjects are not only introductory but are fundamental to all the succeeding work in Physics.

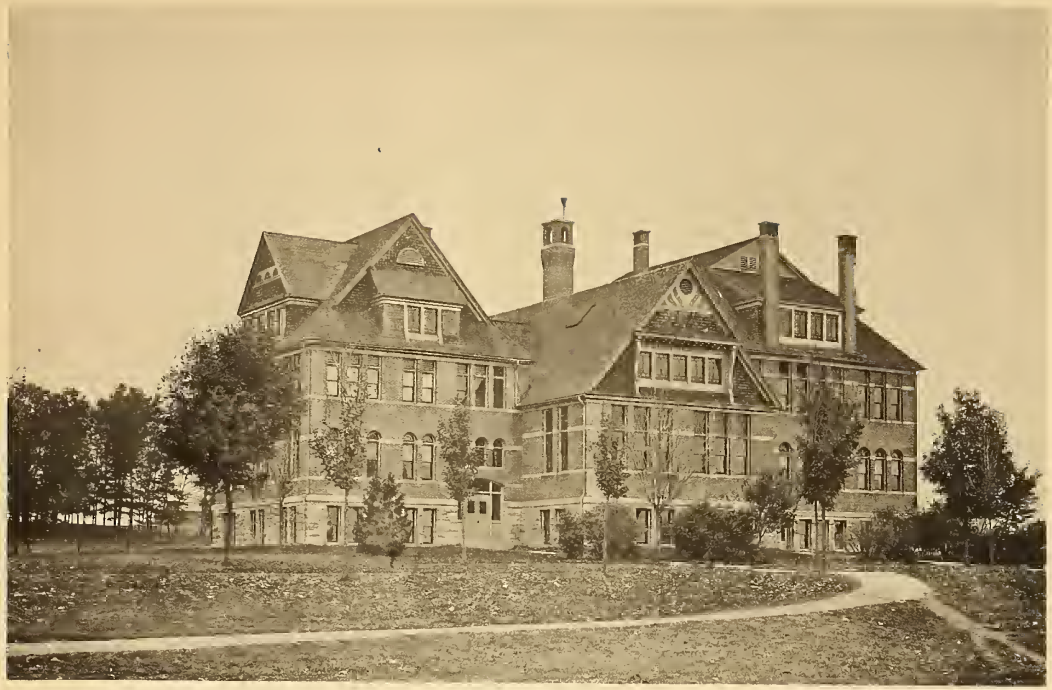
2. A course covering the elements of Heat and of Magnetism and Electricity.

3. A more advanced course in the Theory of Heat, the Theory of Electricity and the Theory of Light.

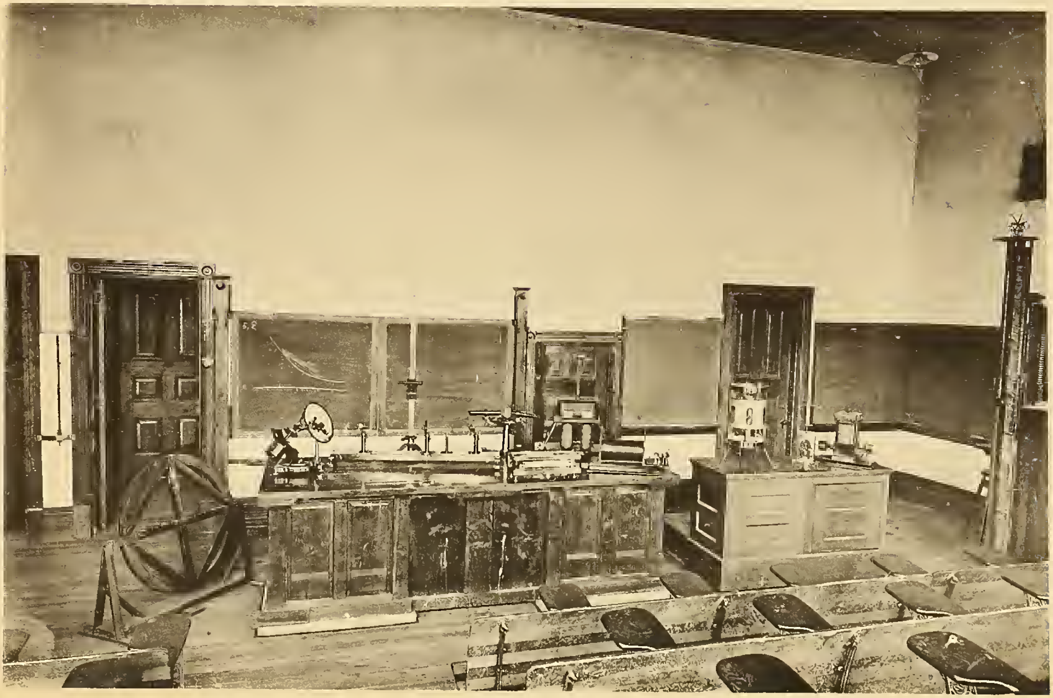
Most of the work of (1) and (2) is taken by all the students in Engineering Courses; while the work of (3) is taken only by those in the full Course in Physics, or in part by those in the Course in Mathematics.

For the students in other Courses than Engineering and Physics a distinct course extending through the Junior year covers systematically, though briefly, the subjects usually included in Physics, viz.: Mechanics, Sound, Heat, Light and Electricity.

Nearly all of the work done in the Physical Laboratory is quantitative in character, and the purpose is to acquaint the student with the use of physical instruments of precision and with the nature and methods of accurate quantitative work in applied physics and in physical research. The work done by students in the different Courses differs considerably. The laboratories are supplied with instruments of precision for the measurement of the fundamental quantities—space, time and mass—and the various quantities in dynamics—sound, heat, light and electricity. Some of the apparatus is of high grade for advanced work by students making a specialty of Physics.



PHYSICS BUILDING.



LECTURE ROOM—PHYSICS.

DEPARTMENT OF AGRICULTURE.

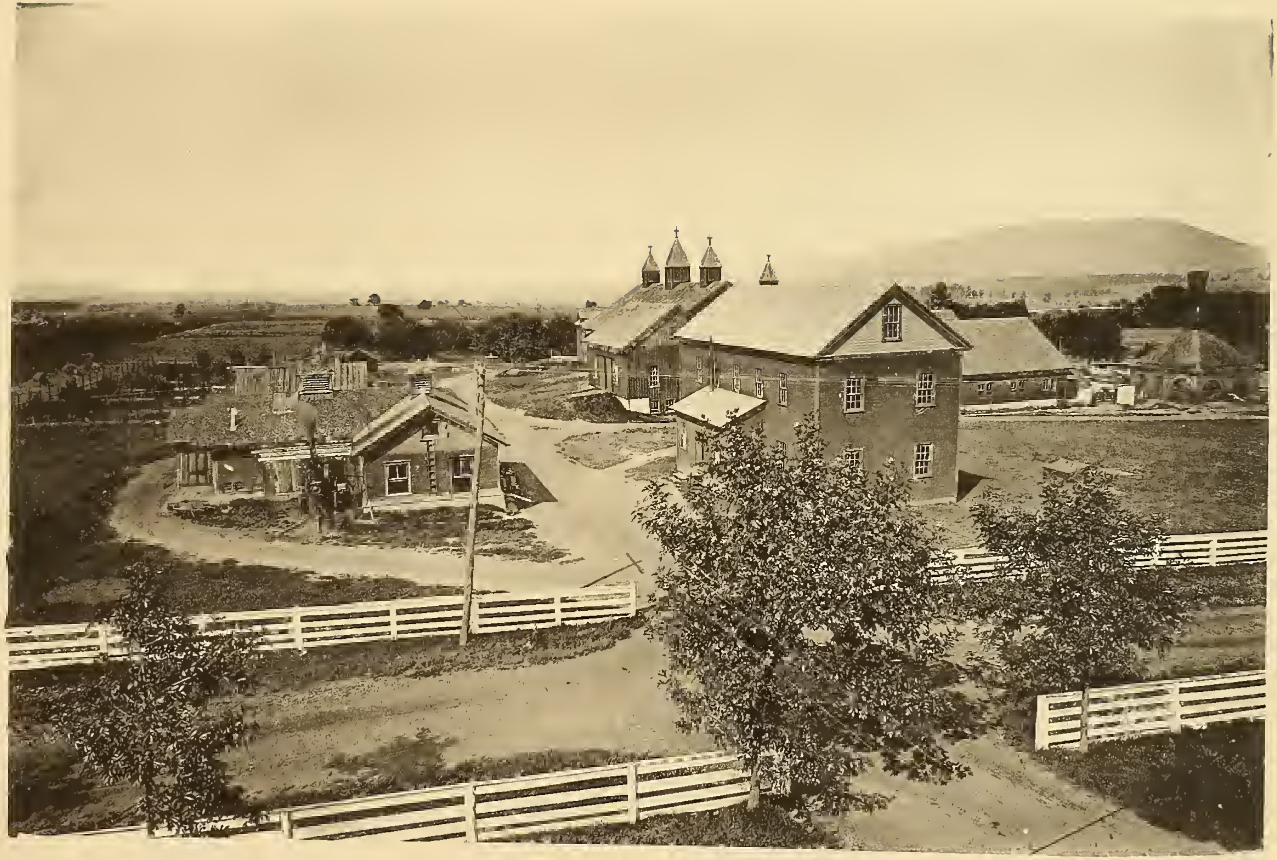
THE original Morrill Act, upon which the College is based, specifically requires the teaching of "Such branches of learning as are related to Agriculture and the Mechanic Arts." The work of the Department of Agriculture falls into three general sub-divisions, namely:

1. The four years' College Course.
2. The Secondary Courses (Creamery, Cheese-making, Short Course, etc).
3. The Extension Work, including the Correspondence Courses in Agriculture and lectures at Farmers' Institutes.

The College Course, of four years, includes, besides general scientific and cultural subjects, four main branches of technical work, namely, Agricultural Chemistry, Animal Industry, Dairying and Agriculture proper. The Secondary Courses aim to meet the needs of those who are unable, for various reasons, to take the College Course, but desire a better preparation for their life work than is afforded by the ordinary schools. The Creamery and Cheese-making Courses offer special instruction in these branches, while the Short Course gives similar practical instruction in general Agriculture.

A special feature of the agricultural work is the Correspondence Courses, by means of which over fifteen hundred students are being instructed through lessons and correspondence at their homes. In addition to this, several members of the School are assigned each winter to lecture at the Farmers' Institutes, coming thus into personal contact with the agriculturists of the State.

For the work of instruction there is available the College farm of 250 acres and the Experiment Station farm of 110 acres, both well equipped, a small Creamery with modern appliances for dairy work, and a fair equipment of illustrative material for class-room instruction. At present this department of work lacks a suitable central building.



AGRICULTURAL BUILDINGS.

THE AGRICULTURAL EXPERIMENT STATION.

THE Agricultural Experiment Station of the Pennsylvania State College was founded in 1887, under the provisions of the so-called Hatch Act, which appropriates $15,000 annually to each State for the maintenance of such a station.

The Experiment Station is an institution for research and not for the instruction of students. Its purpose is to make scientific and practical investigations of the many puzzling problems which confront the practical farmer. The results of these investigations are published as Bulletins and in the Annual Report, both of which are entitled to free transmission through the mails and are sent gratuitously to all residents of the State who desire them.

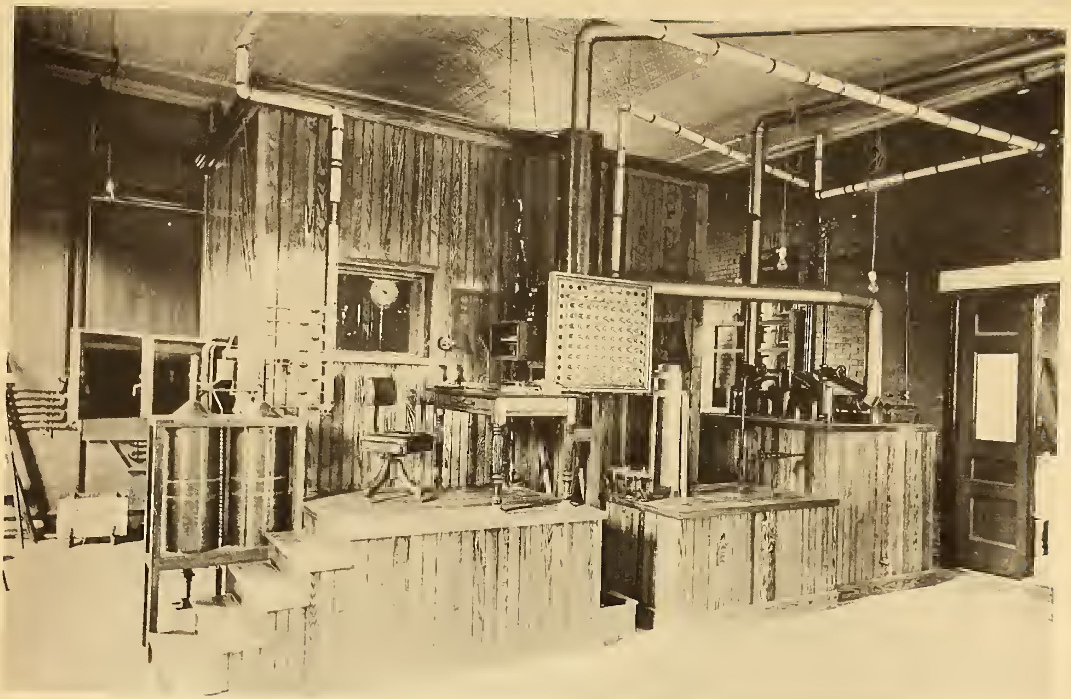
The main division of the work, as at present carried on, are Agricultural Chemistry, Agriculture, Animal Nutrition. Botany. Dairy Husbandry and Horticulture.

The office and laboratory building, constituting the headquarters of the Station, was erected in 1887-8 at a cost of about $15,000. It contains the offices of the Director, Chemist, Agriculturist, Professor of Dairy Husbandry, Secretary, the Library of the Station and the Chemical Laboratories.

For its out-door work the Station has exclusive control of a farm of 110 acres, well equipped with buildings. On this farm extensive field experiments with fertilizers and varieties are carried on, while a high-grade Guernsey herd furnishes facilities for extensive experiments in dairy feeding. The facilities of the College farm are also utilized to some extent for experiments in steer feeding.

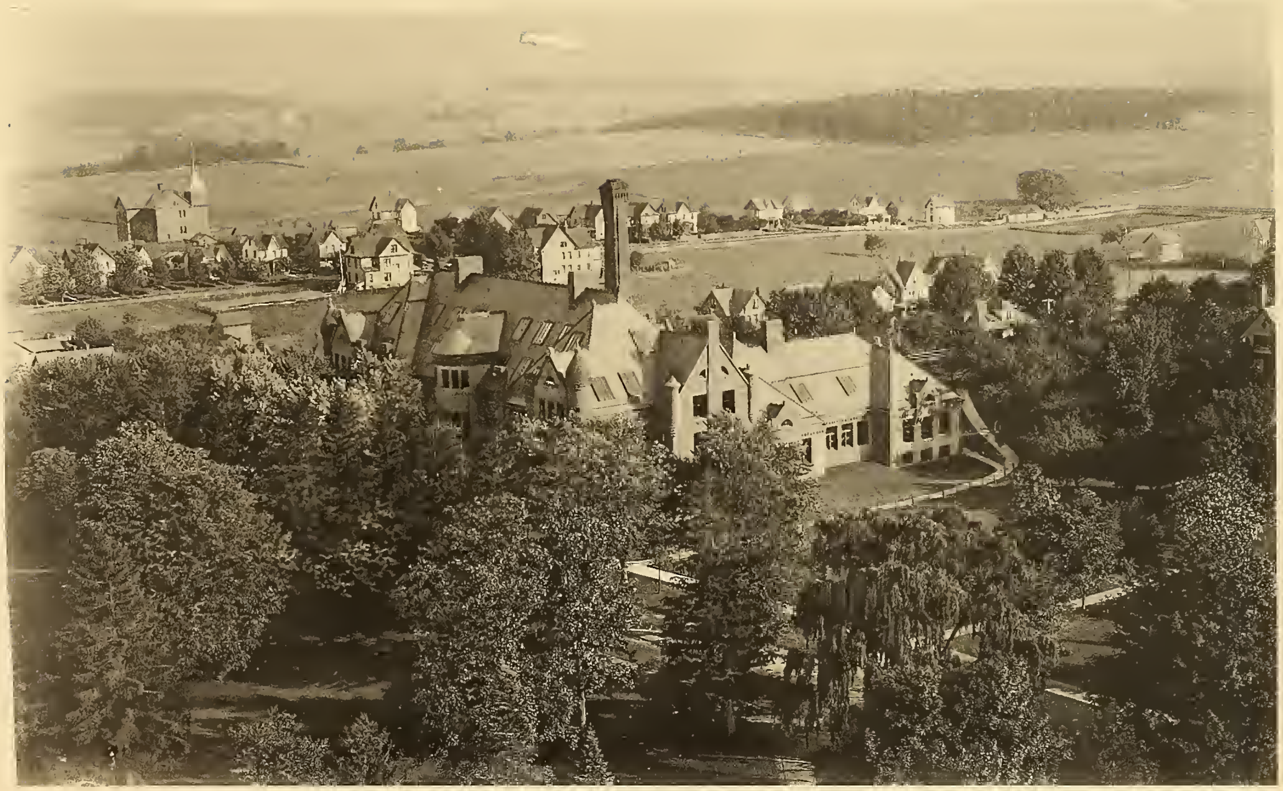
The Commercial Creamery operated throughout the year by the College also affords opportunity for scientific experiments upon the manufacture of butter. cheese and other dairy products.

The most important recent addition in the equipment of the Station is the Respiration-Calorimeter for experiments on domestic animals. This apparatus, costing about $10,000 and housed in a separate building, is the joint property of the Station and the U. S. Department of Agriculture, and is at present the only apparatus of the kind for experiments upon domestic animals in existence. Its purpose is a scientific study of the principles of Animal Nutrition from the standpoint of the energy relations of the food.



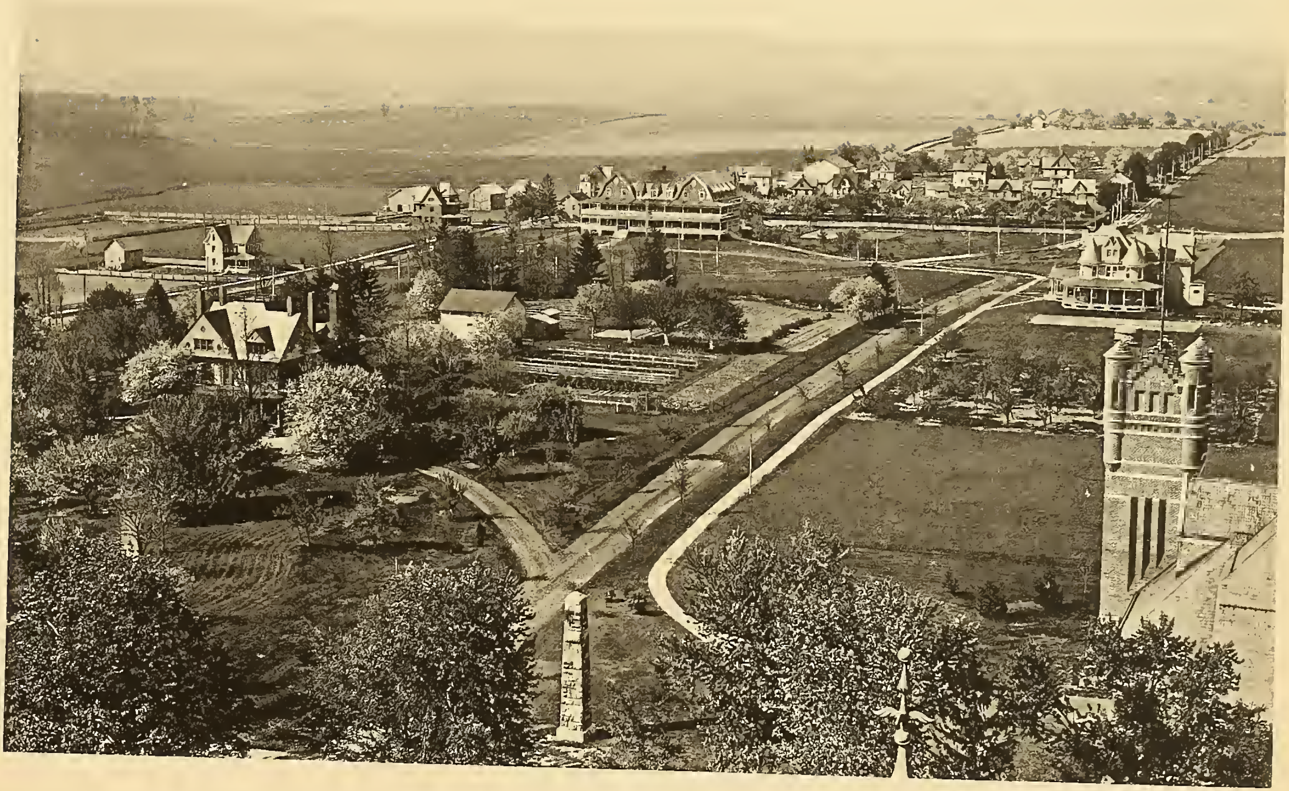
RESPIRATION CALORIMETER.

OFFICE AND LABORATORY BUILDING.

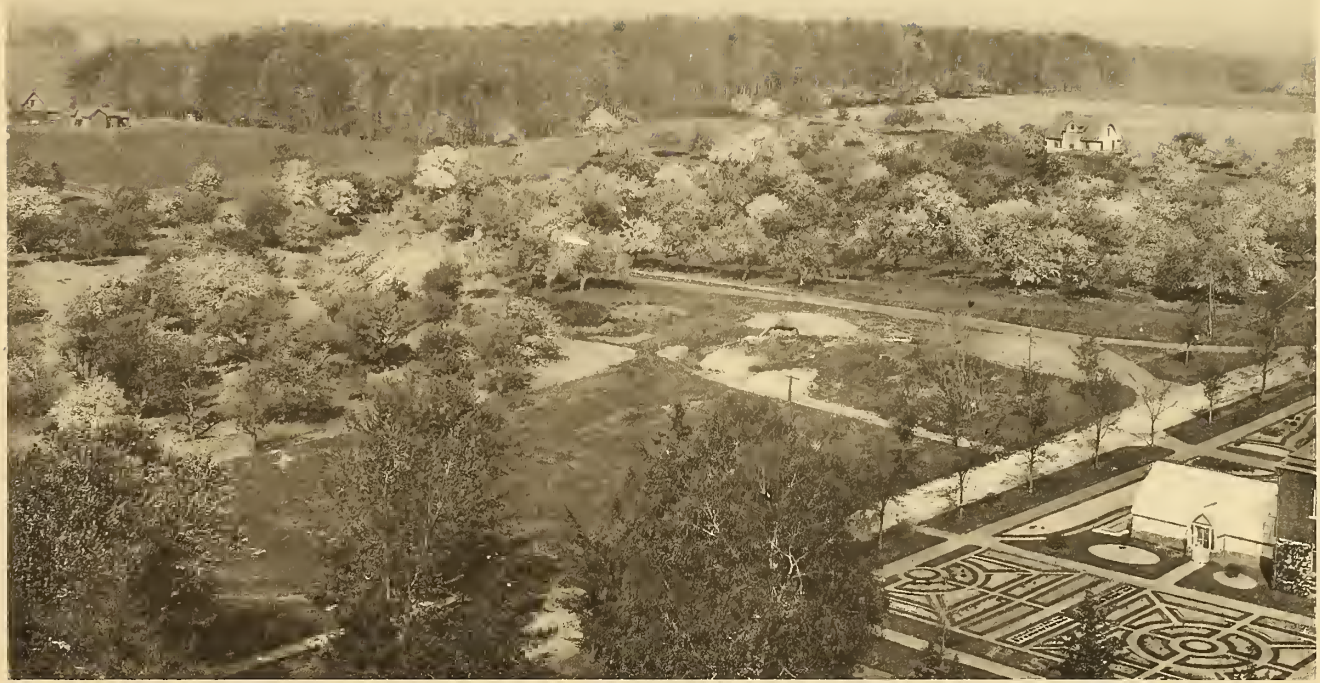


SOUTH.

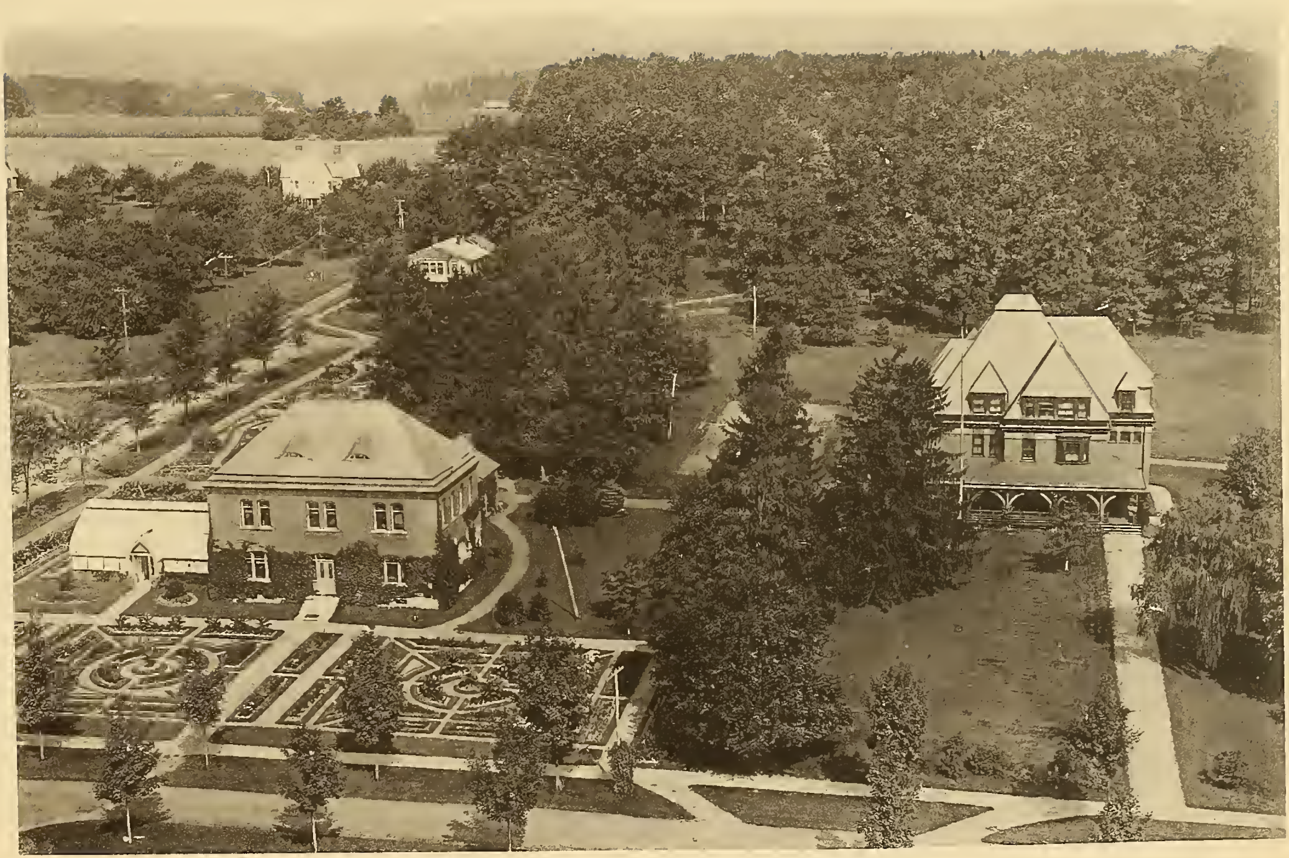
VIEWS FROM THE TOWER.



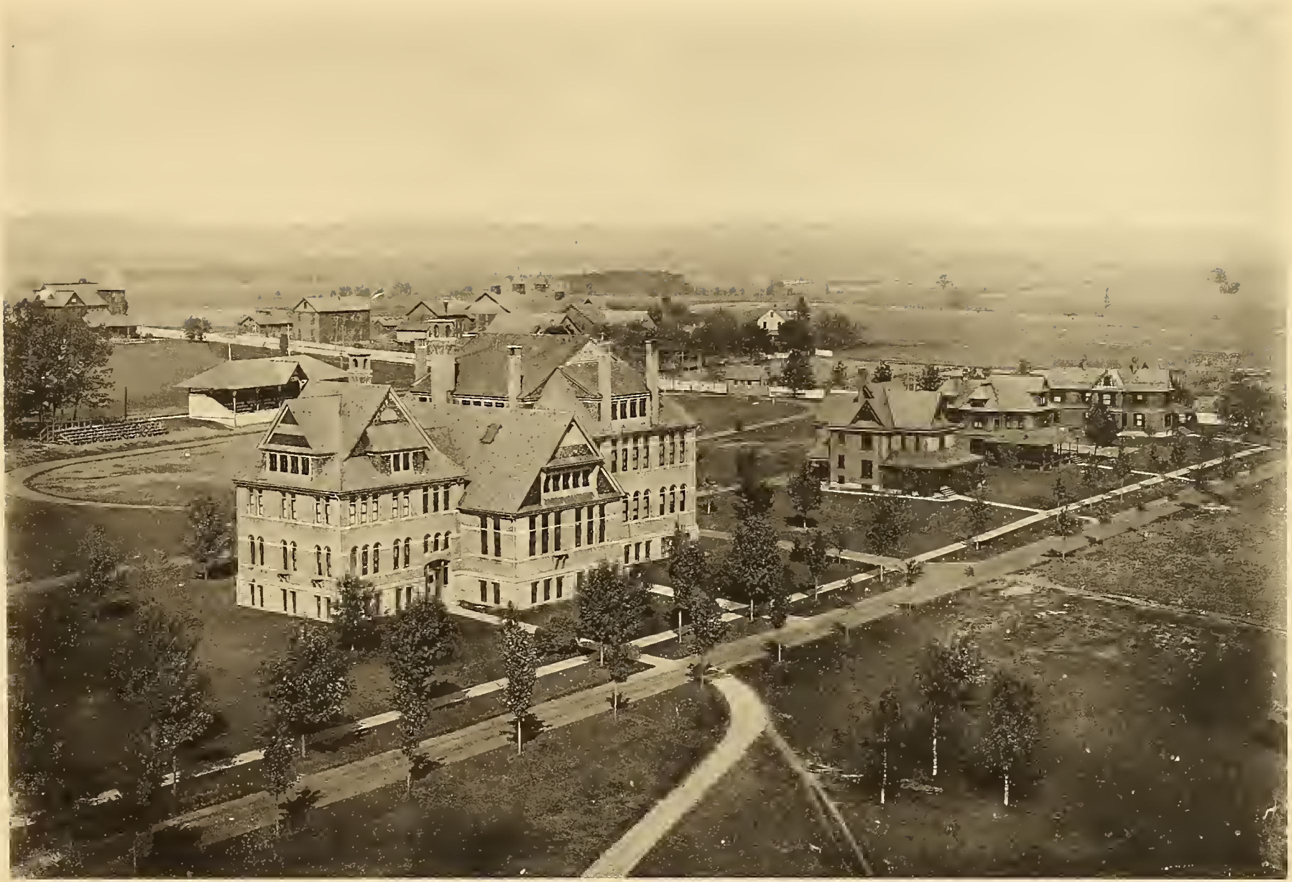
SOUTH WEST.



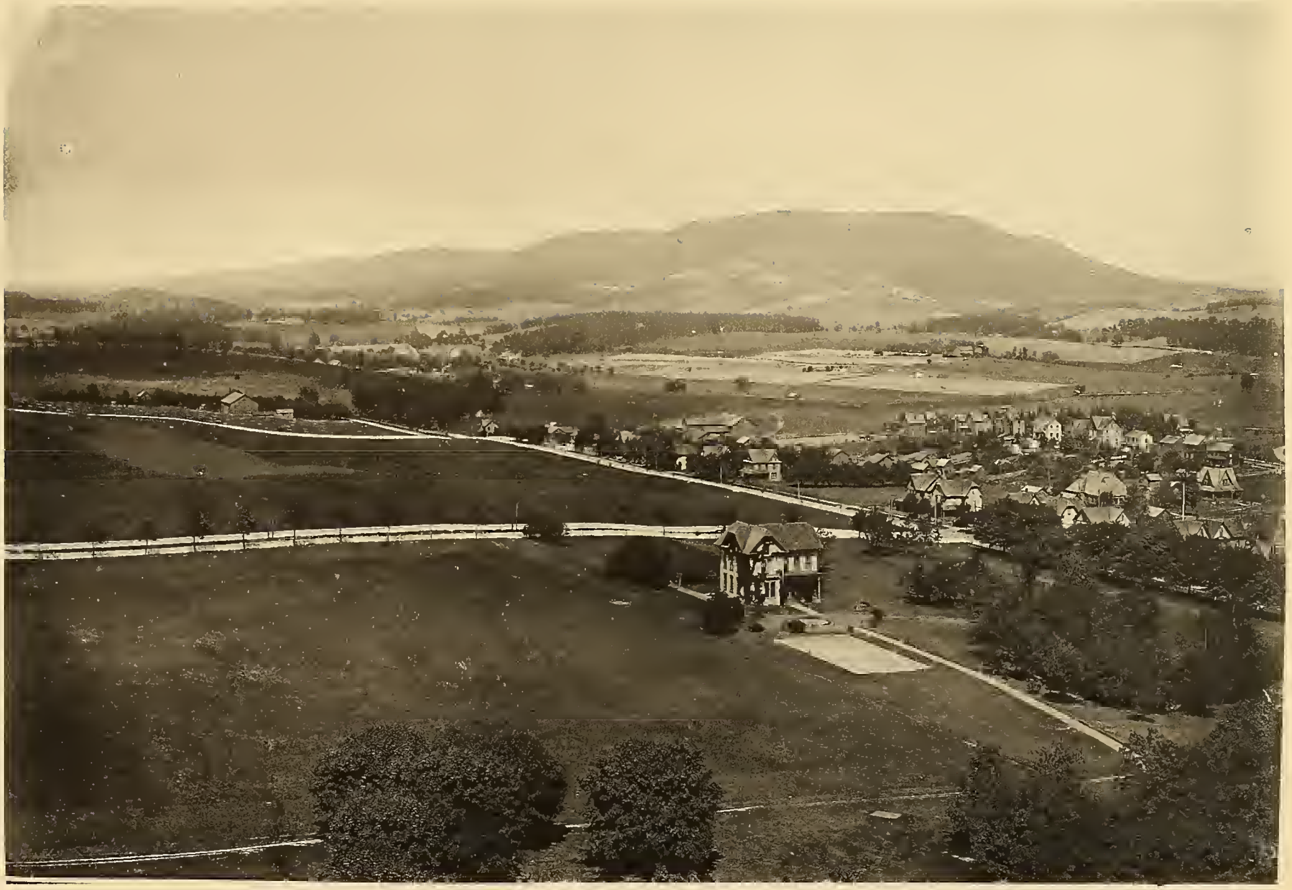
WEST.



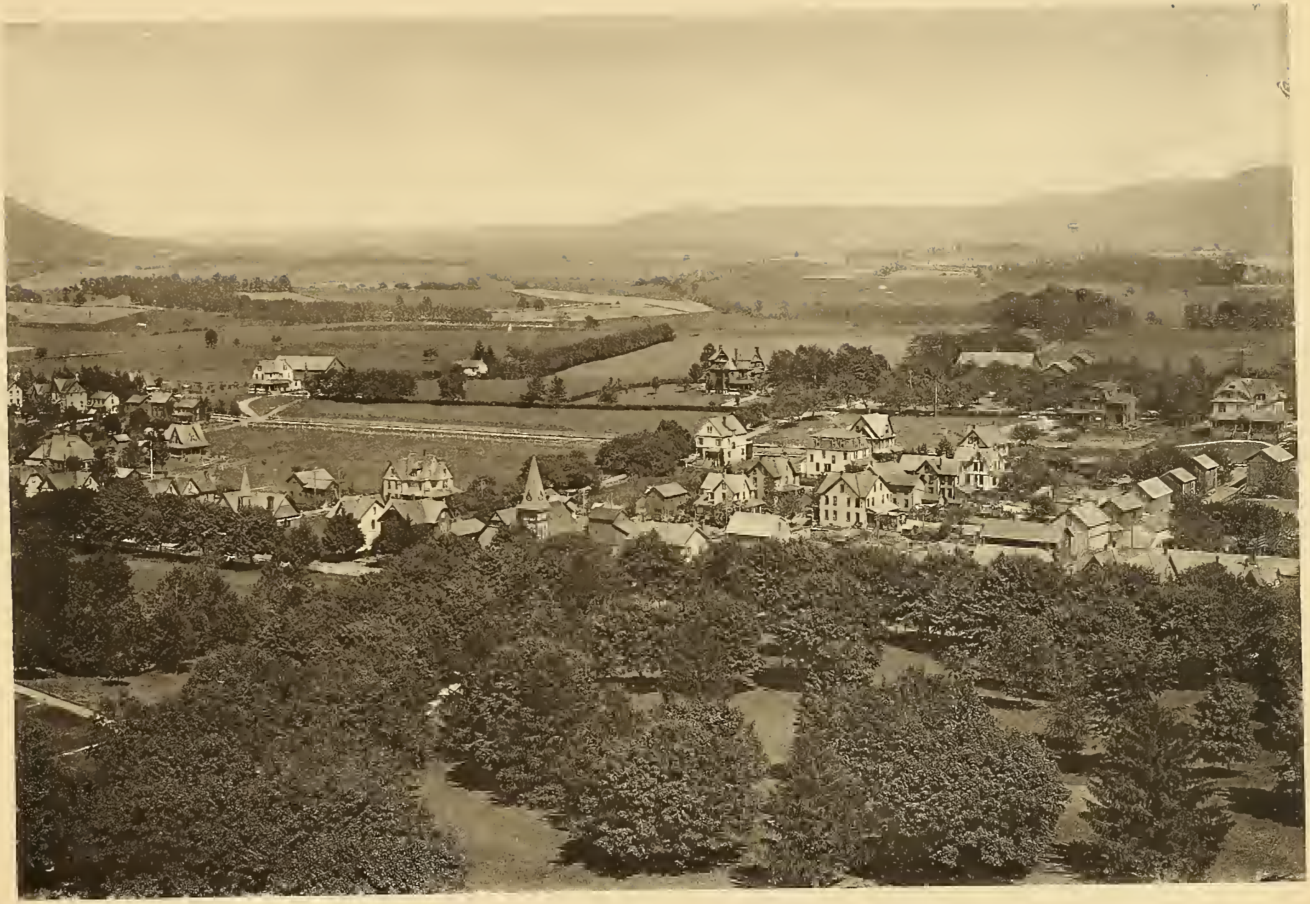
NORTH WEST.



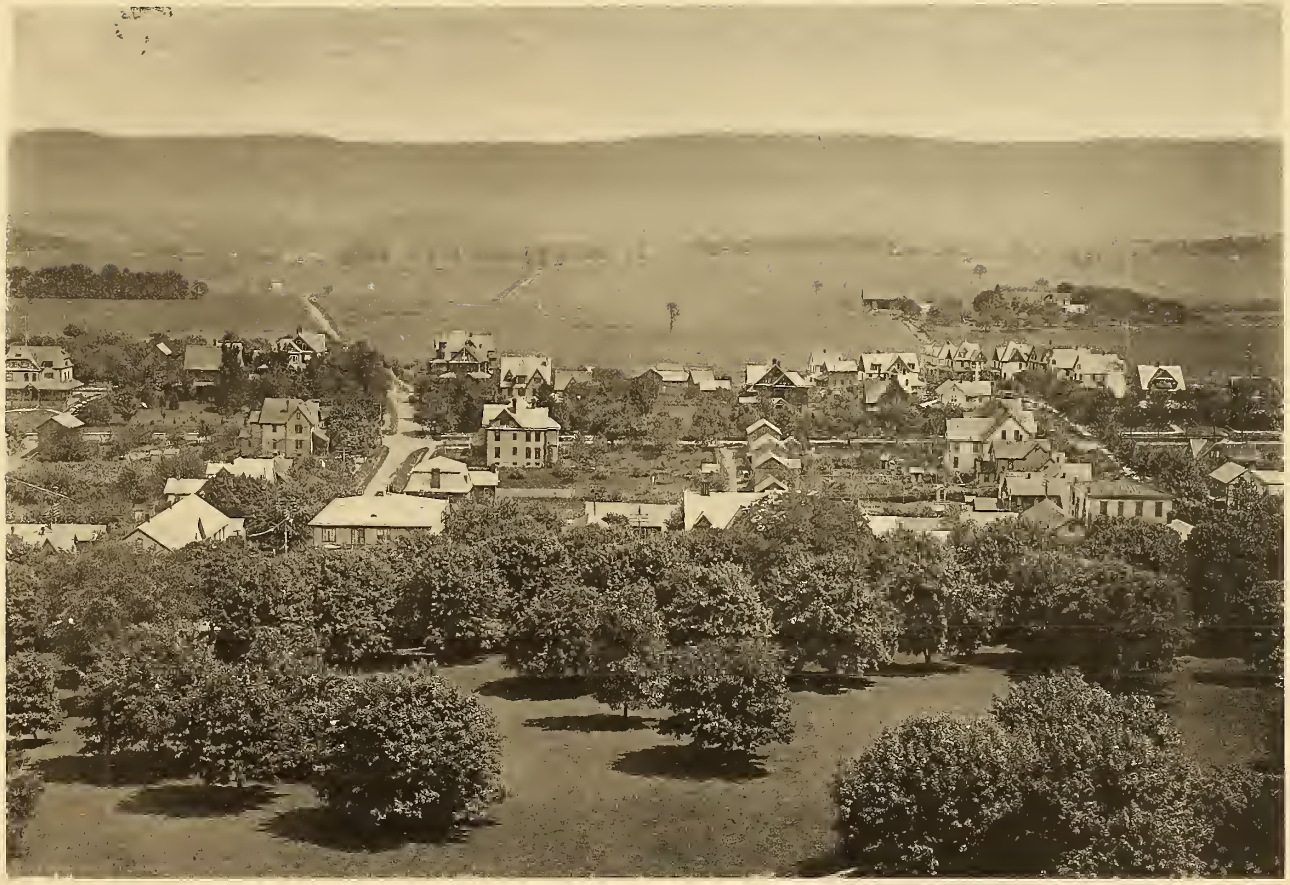
NORTH.



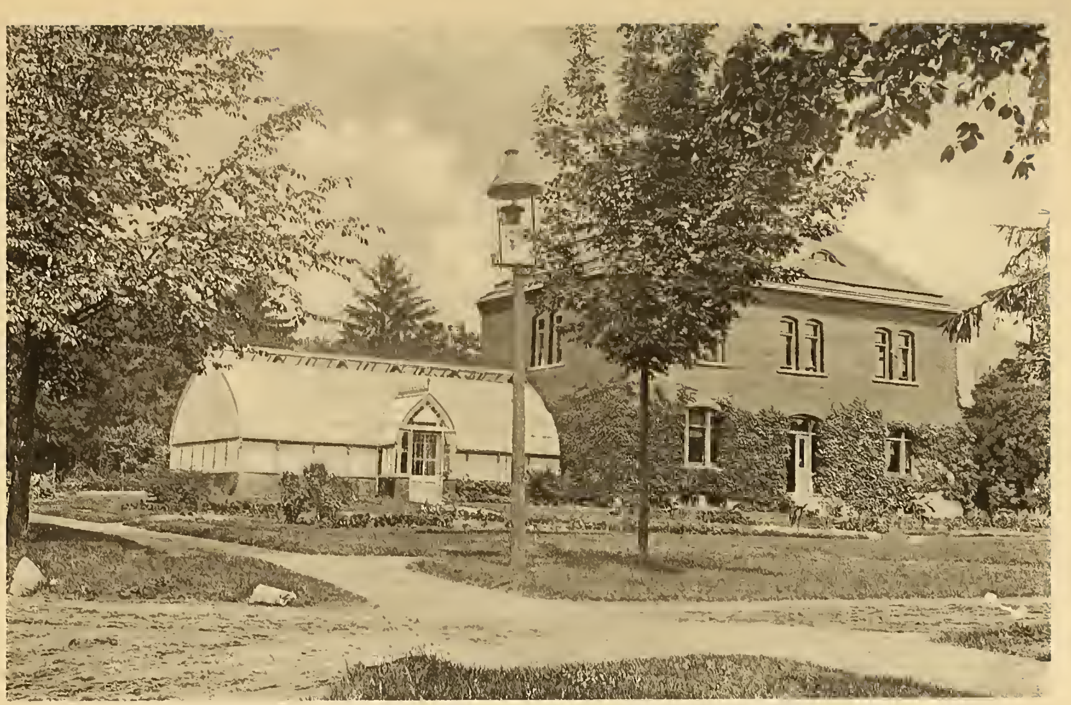
EAST.



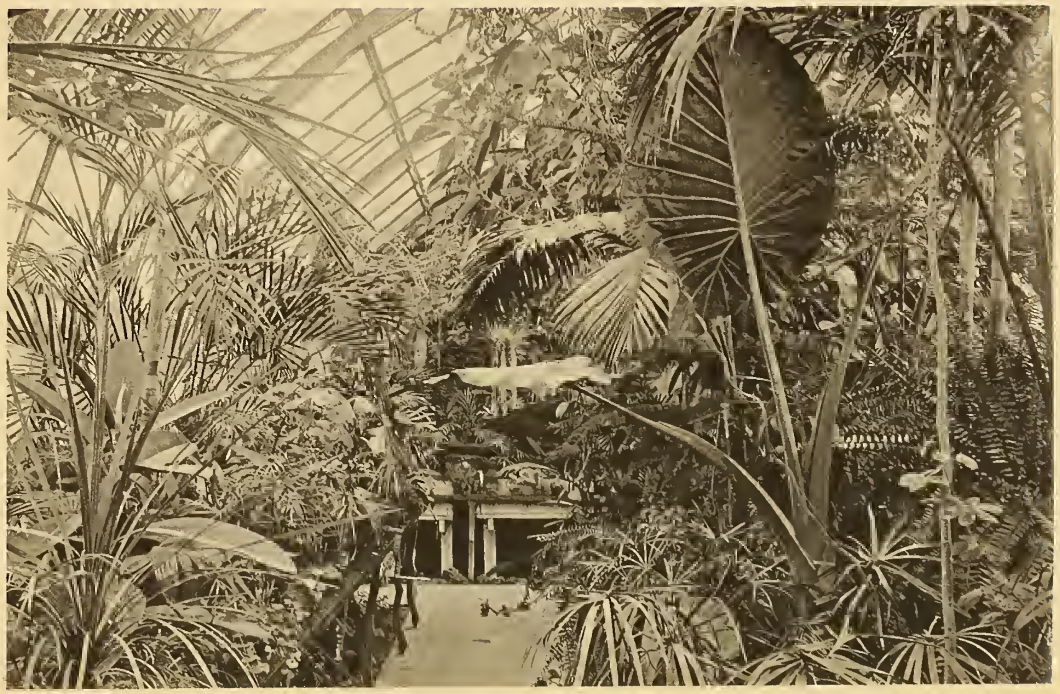
SOUTH EAST.



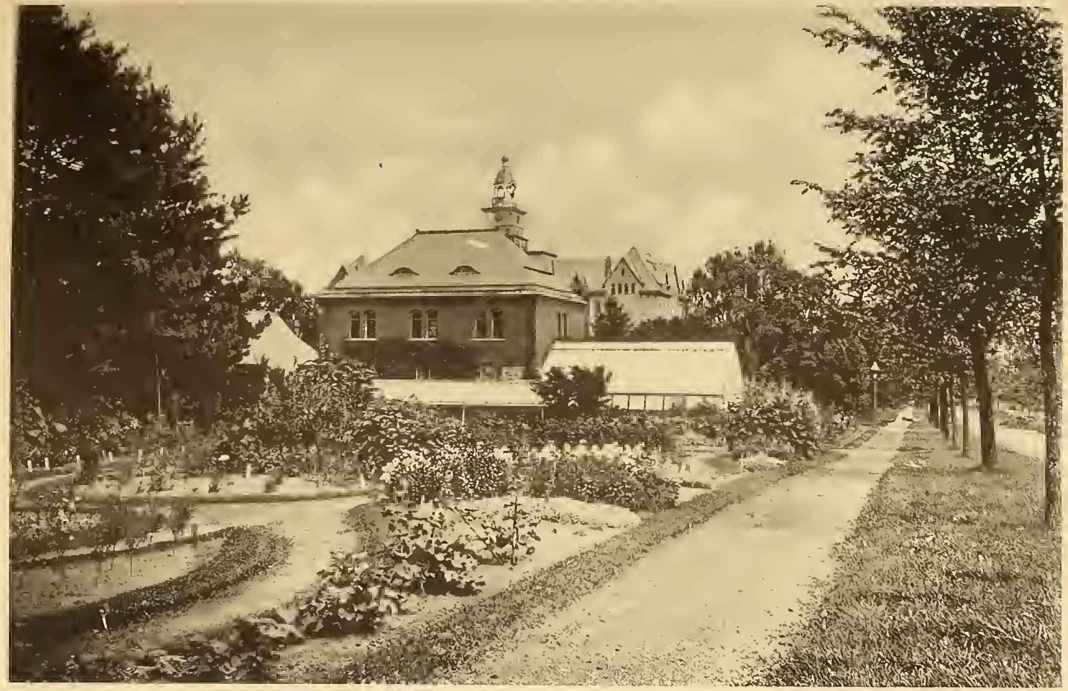
S. SOUTH-EAST.



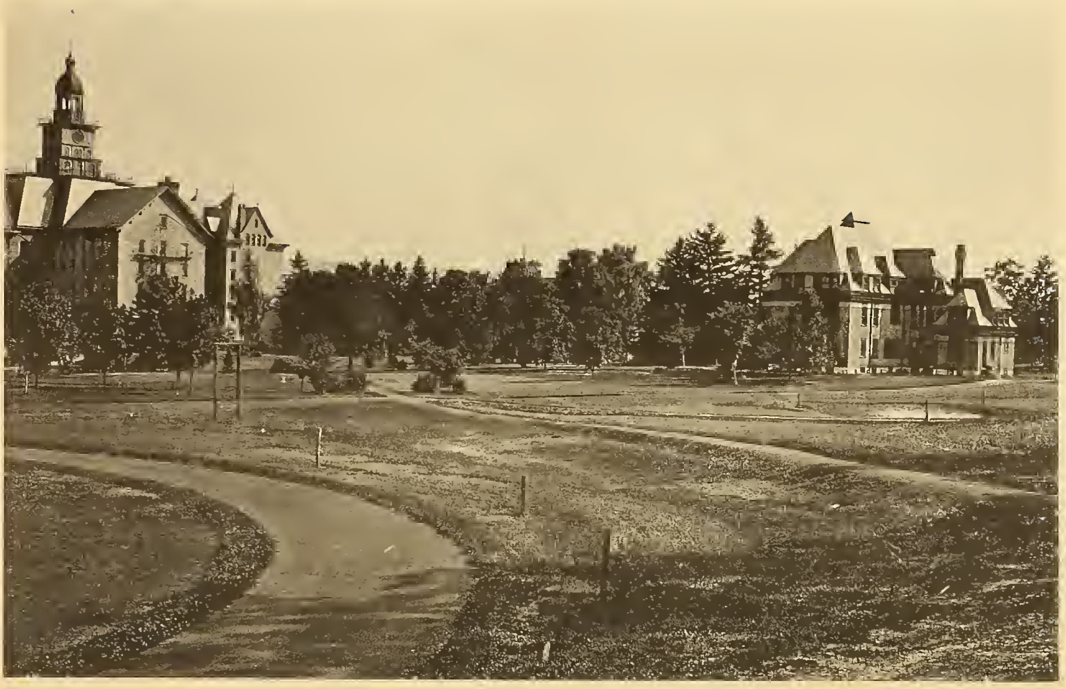
BOTANICAL LABORATORY AND CONSERVATORY.



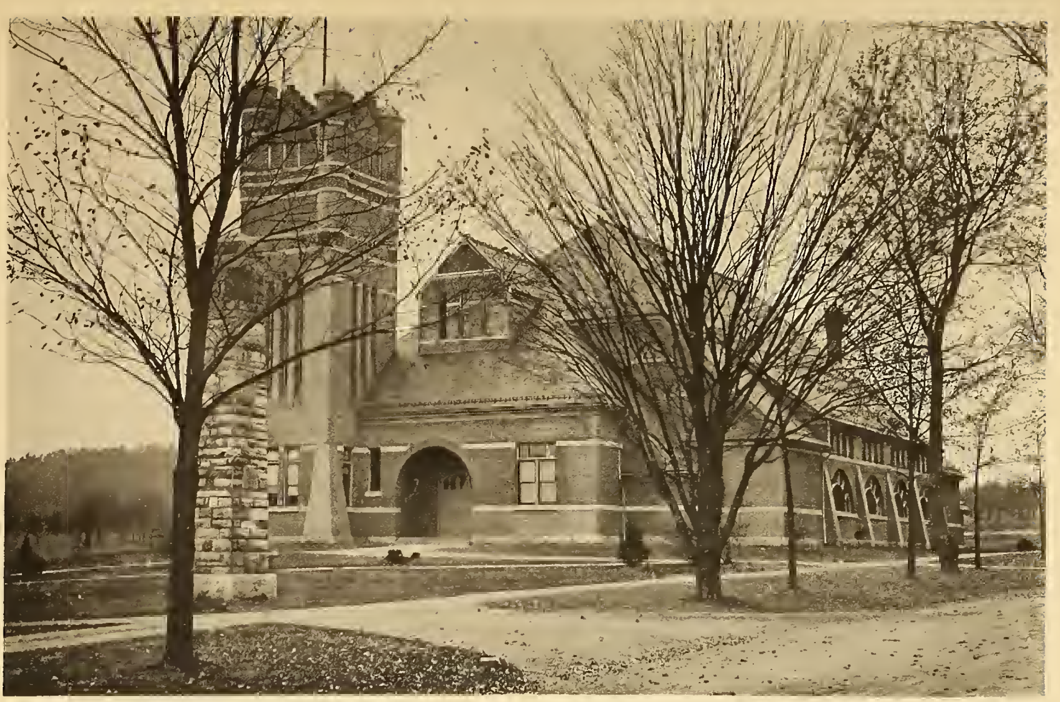
CORNER OF CONSERVATORY.



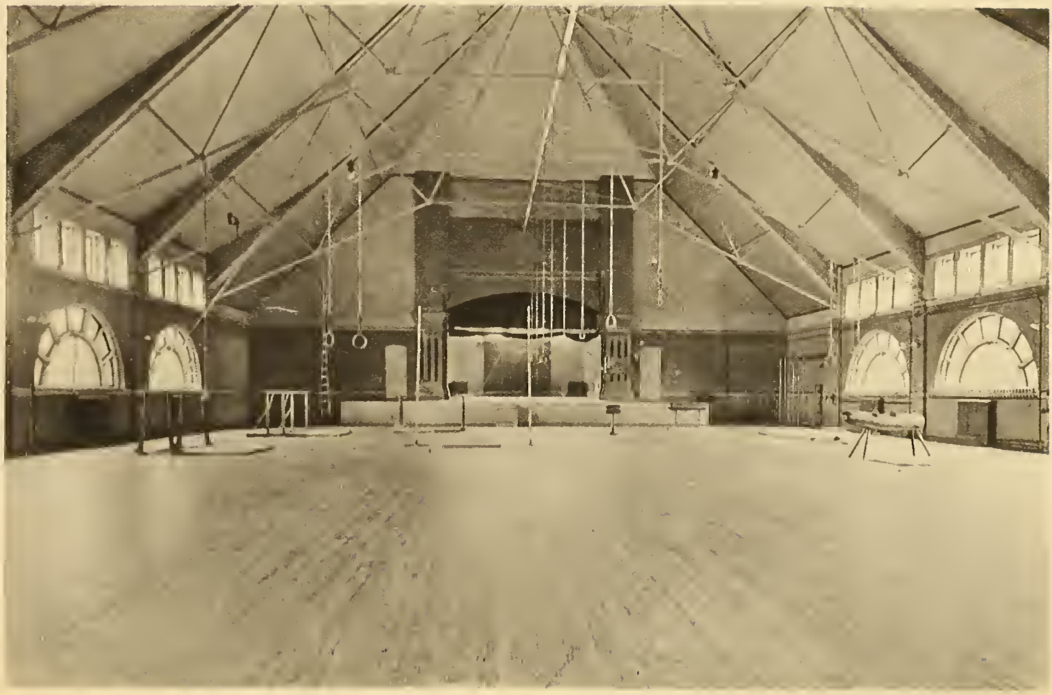
FLOWER GARDENS.



SOUTH FROM BLEACHERS.



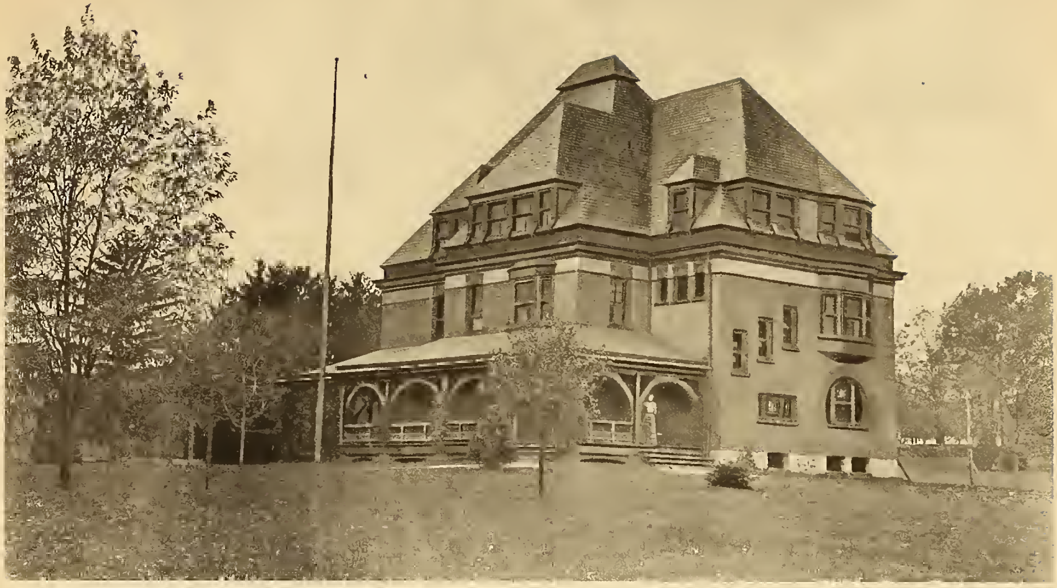
ARMORY AND GYMNASIUM.



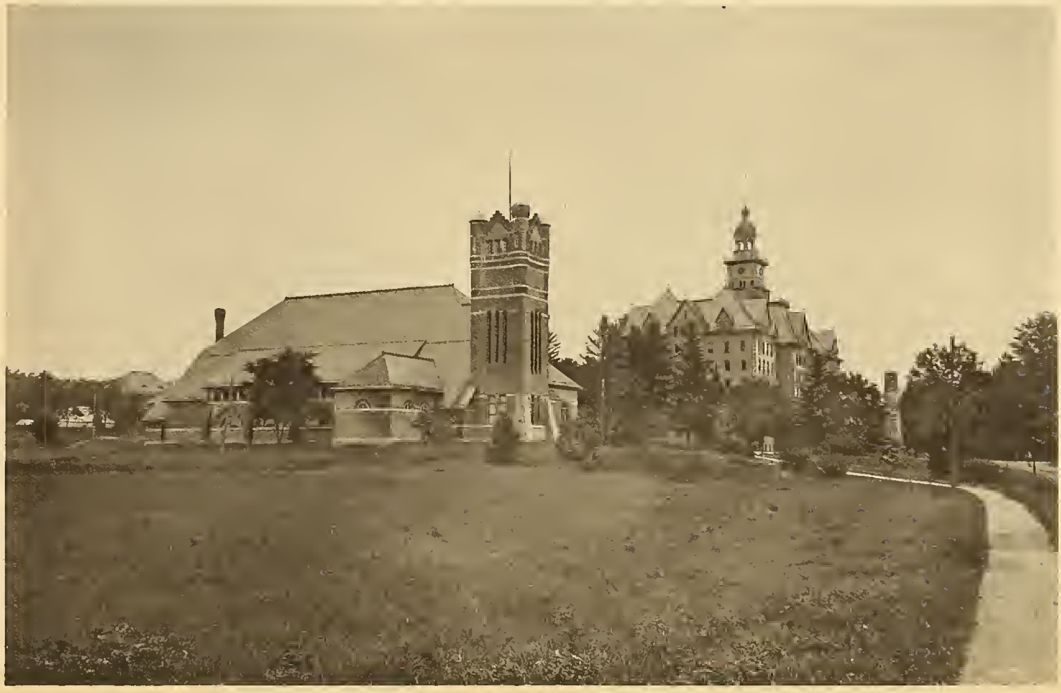
GYMNASIUM.

THE BATTALION.

ATHLETIC FIELD.



LADIES' COTTAGE.

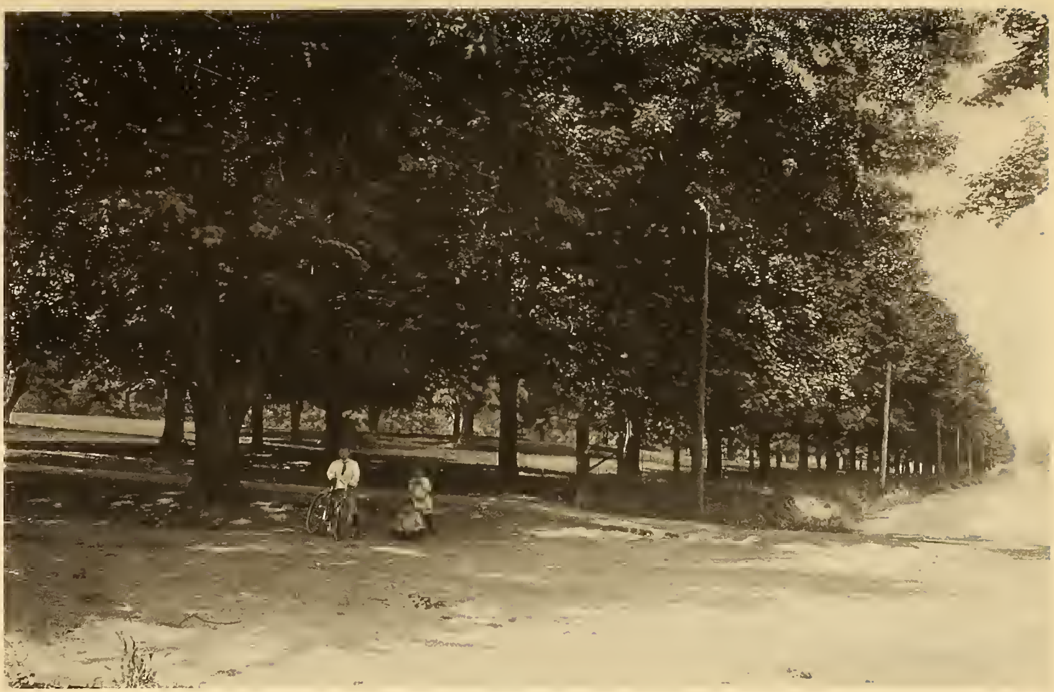


ARMORY AND MAIN BUILDING.

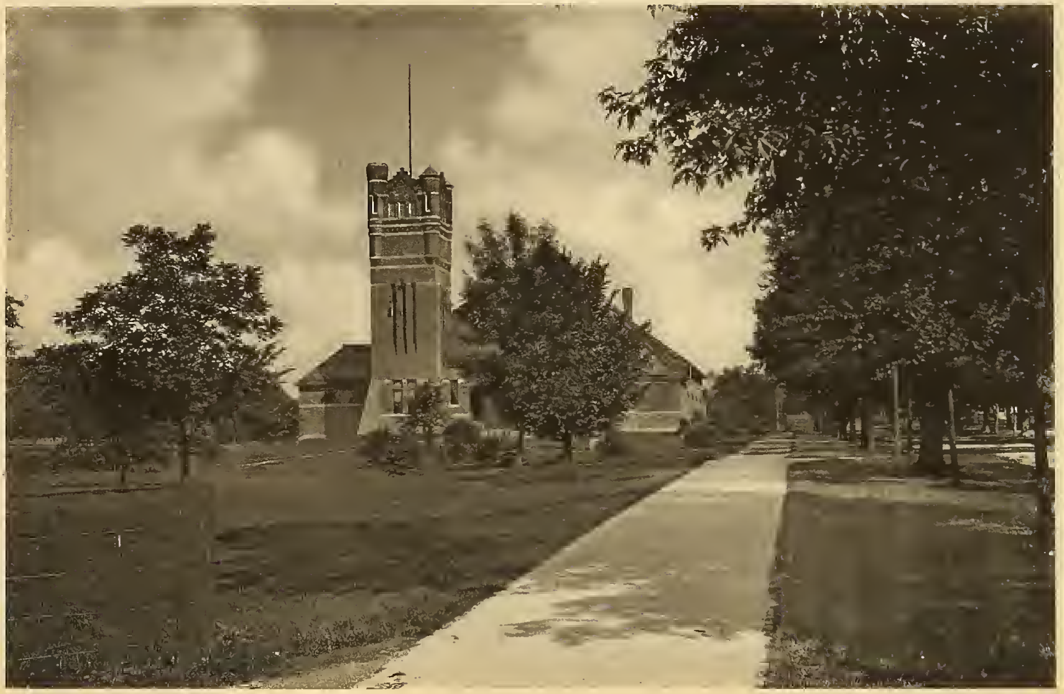
GHOST WALK.

PRESIDENT'S HOUSE.

FRONT OF ENGINEERING BUILDING.



COLLEGE AVENUE.



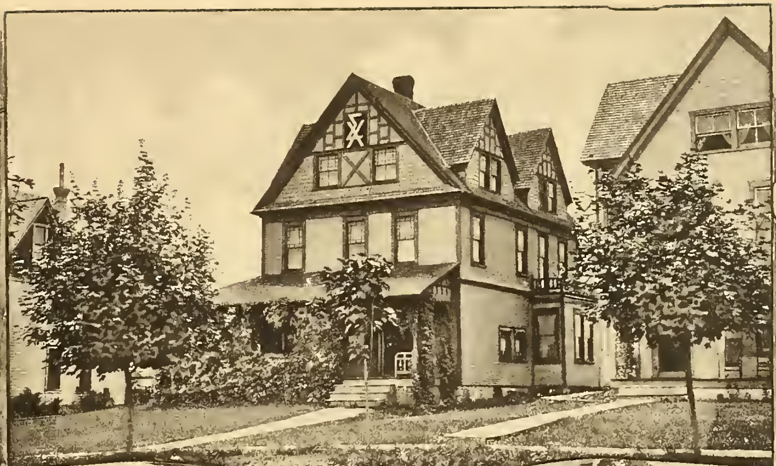
NORTH WEST FROM ENGINEERING BUILDING.

MT. NITTANY.

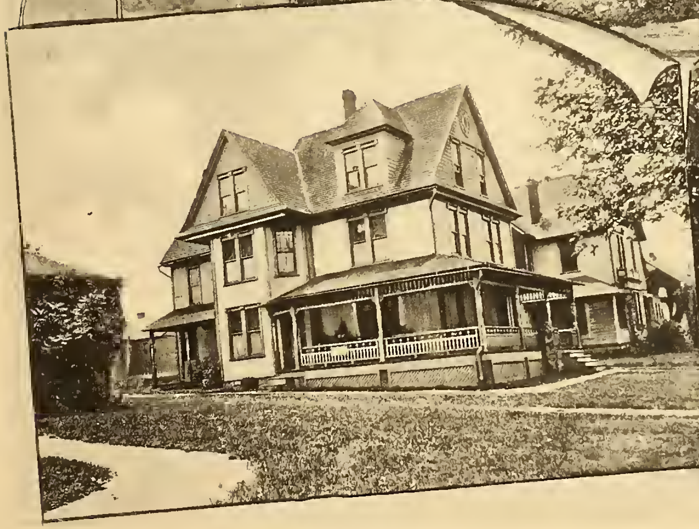
FROG POND.

WINTER ON THE CAMPUS.

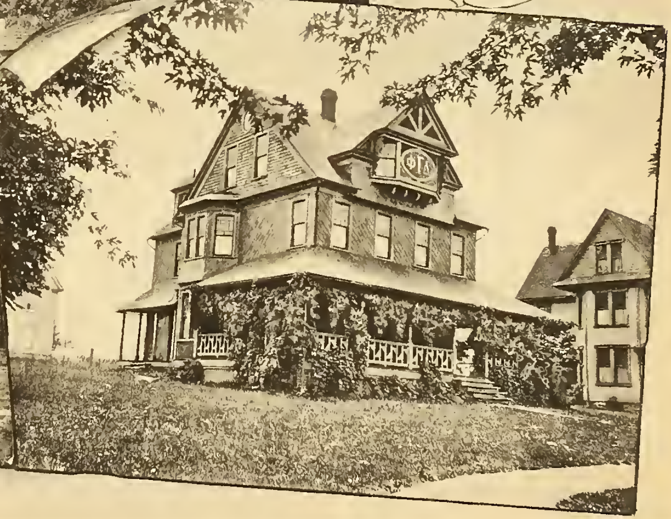
DRIVES.



SIGMA CHI.

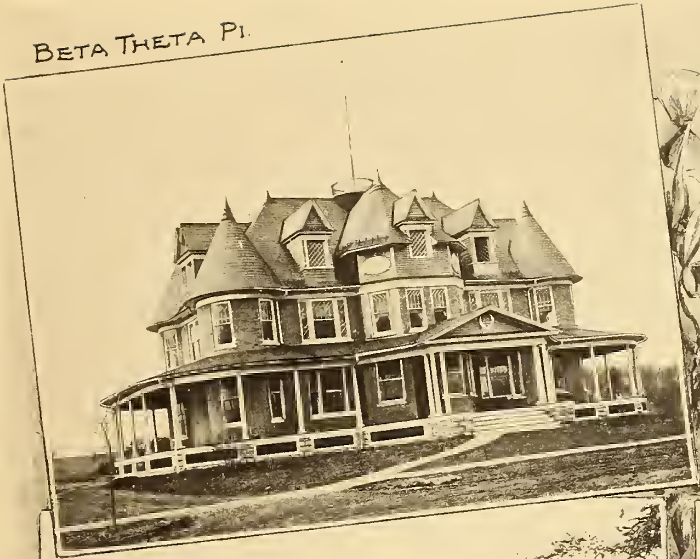


KAPPA SIGMA.

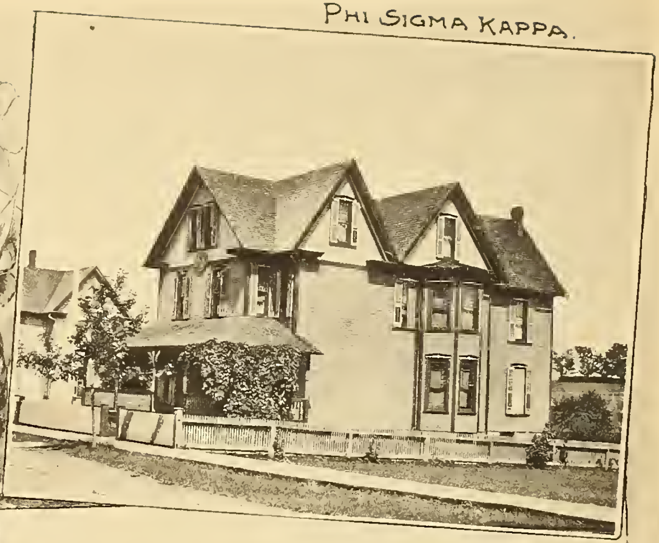


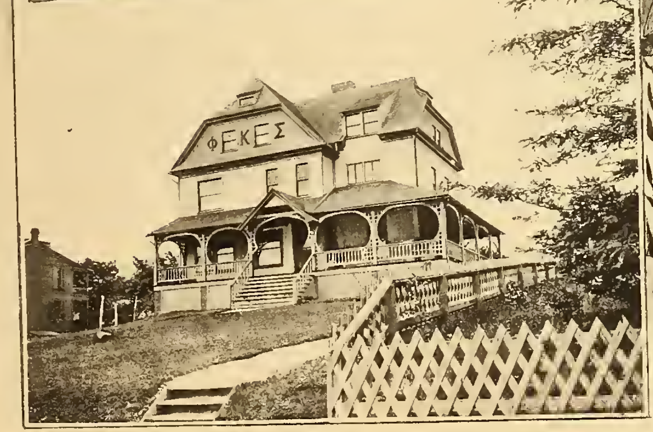
PHI GAMMA DELTA.

BETA THETA PI.

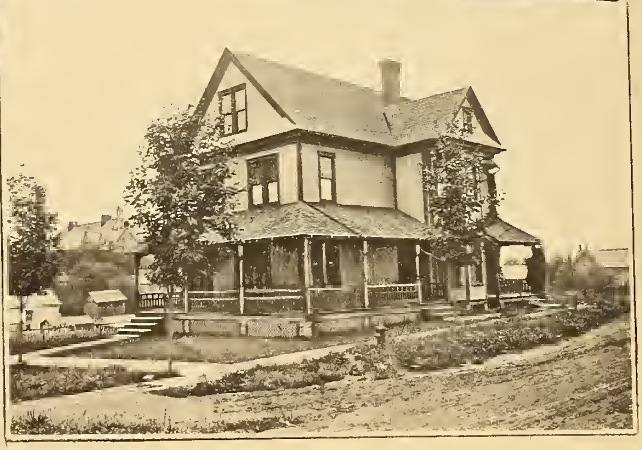


PHI SIGMA KAPPA.



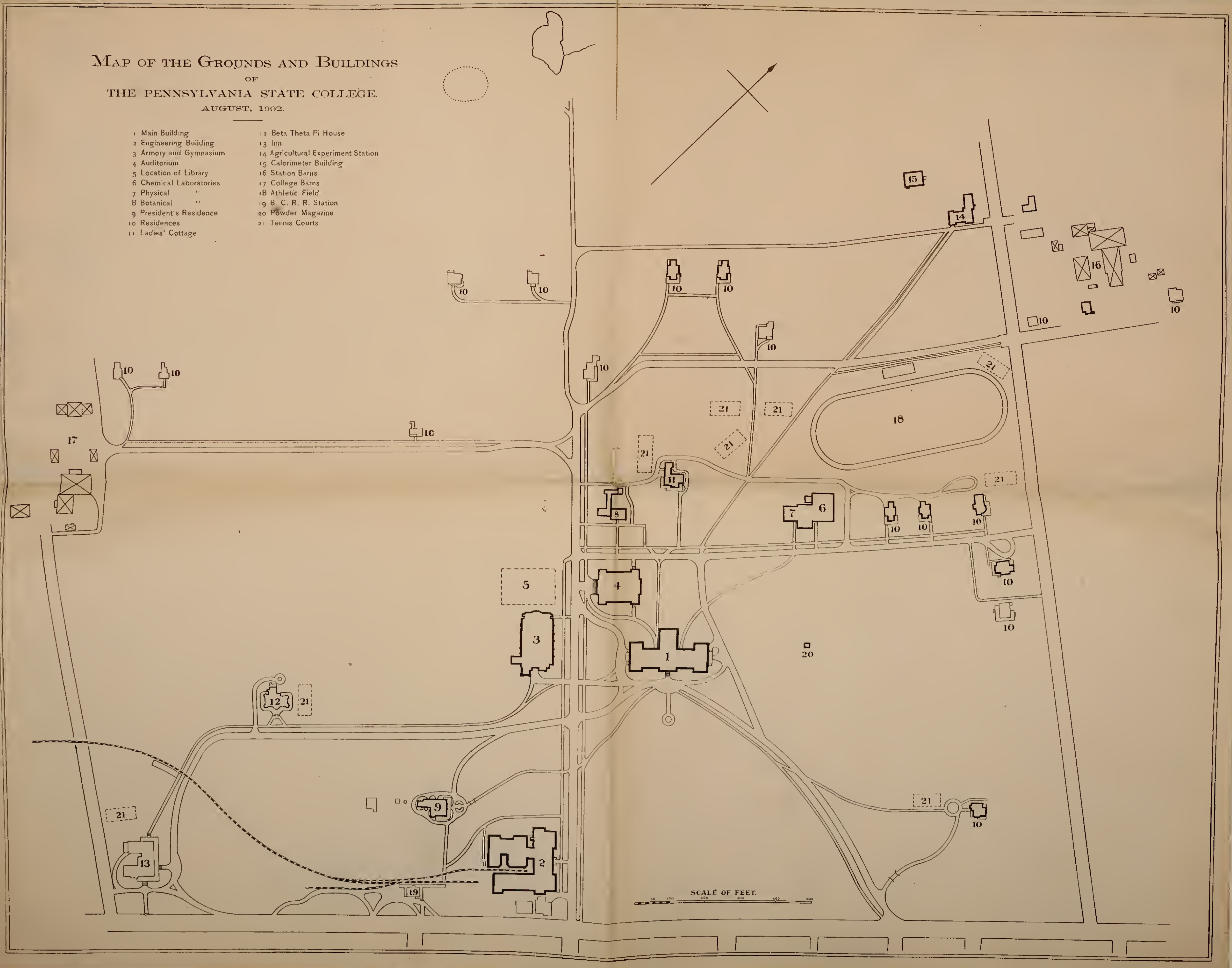


PHI KAPPA SIGMA.



SIGMA ALPHA EPSILON.

[illegible]



Map of the Grounds and Buildings
of
THE PENNSYLVANIA STATE COLLEGE.
AUGUST, 1902.

1 Main Building
2 Engineering Building
3 Armory and Gymnasium
4 Auditorium
5 Location of Library
6 Chemical Laboratories
7 Physical "
B Botanical "
9 President's Residence
10 Residences
11 Ladies' Cottage
12 Beta Theta Pi House
13 Inn
14 Agricultural Experiment Station
15 Calorimeter Building
16 Station Barns
17 College Barns
1B Athletic Field
19 B. C. R. R. Station
20 Powder Magazine
21 Tennis Courts

LIBRARY OF CONGRESS
0 028 334 572 5